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An Inter-Sectoral Study of Canada's Resource Industries

TERRY BENNETT
DAVID L. ANDERSON

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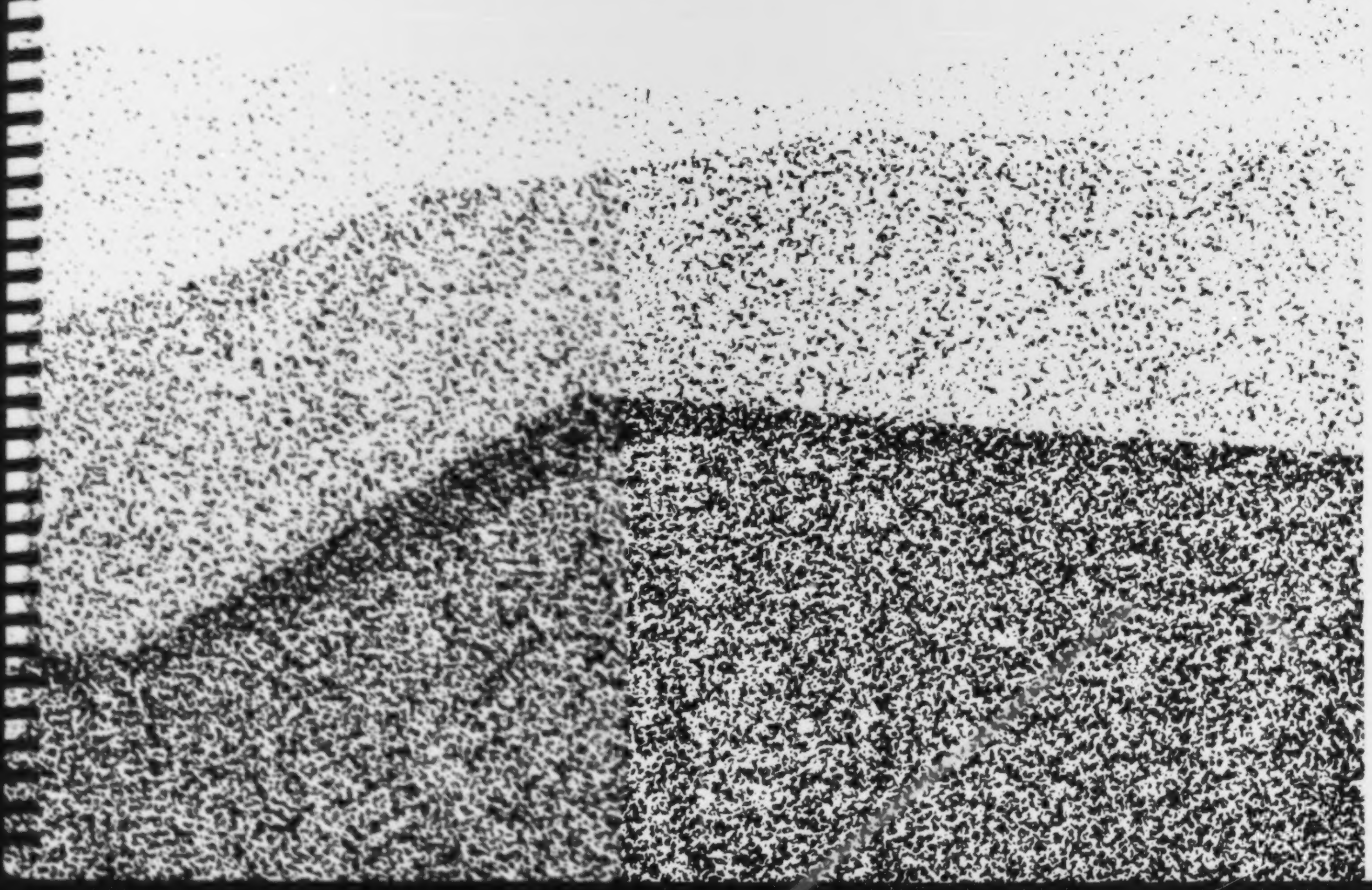

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Foreword

Statistics Canada data on the resource sectors in Canada are frequently used to support policy studies related to fiscal, regulatory, and other initiatives that affect the Canadian resource-based industries. They are also used for comparisons of the economic impact and contributions of the various resource sectors, in the competition for allocation of government resources and fiscal incentives. Unfortunately, in the past such comparisons have been handicapped by lack of comparability between the data series used, particularly in terms of the Standard Industrial (SIC) classification categories included in the primary, processing, and fabricating stages of each of the industries. This study aims at resolving this data shortcoming by first establishing a comparable set of SIC categories for each of the three stages of each resource industry, and then by assembling data within this framework for a wide variety of economic measures, and over a useful time-span.

The findings are presented in this technical paper in graphical form, to simplify the presentation and make it accessible to a wide range of readers. For those interested in the data base itself, the complete data is in tabular form.

The CRS Technical Paper Series is designed to present detailed and and technical studies and analyses that provide background data on specific aspects of the Canadian mineral industry. It is hoped that this series will contribute to an understanding of some of the complicated inter-relationships that underlie the industry, and have economic and policy implications that bear consideration by policy makers and researchers in industry, government, and universities.

Views expressed are those of the authors, and do not necessarily represent the views of the Centre or its sponsors.

Margot J. Wojciechowski
Centre for Resource Studies

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Summary

The purpose of this study is to compare and contrast the relative economic performance of the mining, forestry, petroleum and agricultural sectors of the Canadian resource industry. More specifically, each sector's activity is evaluated with respect to several economic indicators such as: Gross Domestic Product; value of production; employment; wage rates; freight activity; income tax payments; and pre- and after-tax rates of return on total assets and equity.

A major contribution of this study is that it provides a consistent and explicit format for evaluating inter-sectoral activity. First, only Statistics Canada data are employed. Second, each sector's activity is disaggregated into widely accepted components: primary, processing and fabricating. Equally important, this allocation process relies heavily on Statistics Canada's Standard Industrial Classification Codes (1970 and 1980 editions).

Although the results of the analysis do not lend themselves to summarization, it can be said that all elements of the Canadian resource industry display considerable variability in economic performance over time. Nevertheless, forestry and mining appear to be the most volatile; in fact, in many situations, these two sectors display remarkably similar results with respect to trends and, sometimes, even with respect to absolute performance. The findings also suggest, that the post-1982 economic recession had a more severe and longer lasting impact on the Canadian mining industry than on the other sectors under study. However, it must be stressed that the data utilized in this study seldomly extends beyond 1986 due to publication lags in one or more of the relevant time series. Hence, the recent improvement in the performance of the Canadian mining sector is, by and large, not reflected in this study.

The authors hope that this study will prove to be a useful reference guide to public and private sector policy analysts and to students, broadly defined, of one or more elements of the Canadian resource industry. Although the economic importance of this industry has declined somewhat in the recent years, it is still of vital importance to the well-being of Canada; and, as recent events in mining and forestry clearly indicate, it still has potential to be an important engine of economic growth.

1. INTRODUCTION

Canada's resource industries have undergone fundamental changes over the last decade and a half. These changes were particularly acute in the first half of the eighties, a time in which producers witnessed a dramatic decrease in both demand for and prices of raw materials. While recent price trends have been more encouraging, increased competition from foreign sources, an expansion in the number and range of man-made substitutes, and weak demand will likely continue to make the eighties a difficult and challenging time for the usually prosperous resource industries. These changes have raised questions as to the nature and extent of the influence of resources on the Canadian economy, and the relationship amongst the various resource industries themselves.

Representatives from each resource industry have at times made claims as to the extent of their industry's contribution to the national economy. These claims have periodically made their way into the popular press and hence into the public debate over the role of resources in Canada's economic development. Unfortunately, these claims have not always been as reliable as one would wish. At best, the claims have been ad hoc in nature, with the definitions of an industry expanding or contracting to suit the needs of the particular situation. The result has been inconsistent and often contradictory reports on Canada's resource industries, which has added to the uncertainty surrounding the changing nature of this important sector of our economy.

The purpose of this study is to provide information on the Canadian resource sector based on reliable statistics and consistent industry definitions. The paper examines Canada's four major resource industries - mining, forestry, agriculture and petroleum. The time period covered is roughly 1971 to the present, although a number of the series is extended back as far as 1965. The "present" is taken to mean the most current data available at the time of printing. Unfortunately, the time lag in producing reliable data sometimes stretches to a number of years. For this reason 1984, and in one case 1983, was the latest year in which statistics were available for most of the variables examined. However, in some cases, data were available to 1986 or 1987.

Comparisons between industries are made with respect to a number of economic indicators such as contribution to gross domestic product (GDP), exports, investment, employment and wages paid. As well, a variety of financial variables is examined, including profits, income taxes, debt-to-equity ratios and two rate-of-return criteria.

Because of the increasing interest in the degree of secondary processing taking place within our borders, the activity of each of the four industries is analyzed at three separate stages of activity - primary, processing and fabricating. The three stages of each industry often differ dramatically in terms of both scale and volatility.

The numbers used in this study were drawn from a variety of Statistics Canada sources and are expressed in annual terms. The industry and stage-of-activity definitions are based on the Standard Industrial Classification system of Statistics Canada, in order to provide the consistency necessary to generate reliable results, especially when attempting to compare performance across a number of different industries. Most series are expressed in current and constant (1986) dollars, where a gross national expenditure (GNE) price deflator was used to correct for the distorting effects of inflation.

In summary, this paper provides an extensive documentation of Canada's resource industries from 1971 to the present, based on consistent industry definitions and reliable statistics. The aggregate nature of this study should be stressed. It is possible that specific firms or sub-industries within each resource industry examined here are experiencing trends different from that of the industry as a whole. For example, while mining in general suffered hardships during the early and mid eighties, gold mining enjoyed a boom period. Also note that only the direct contributions by each industry are examined. While recognizing the importance of indirect or "multiplier" effects, the extensive nature of this study would make the addition of such an analysis prohibitive.[1]

The format of the paper is as follows. The next section describes in detail the industry definitions, stage of activity definitions and information sources utilized throughout the study. Sections three and four make up the body of the paper and give the results of each industry's contribution according to the various criteria outlined above. Section three deals with the "macro" variables, such as gross output, contribution to GDP, employment and exports. For each of these variables, text, graphs and tables are presented. The paper is meant to be used as a reference work and therefore offers little analysis; the text serves to highlight trends and point out major deviations, rather than fully explain the reasons behind them. Section four outlines the financial statistics (profits, taxes paid, etc.), and follows the format of section three. Section five concludes the paper.

---

[1] For an analysis of this nature see: P.E. Nickel et al. *Economic Impacts and Linkages of the Canadian Mining Industry*, Kingston: Centre for Resource Studies, 1978., as well as R.W. Boadway and J.M. Treddenick, *The Impact of the Mining Industries on the Canadian Economy*, Kingston: Centre for Resource Studies, 1977.

2. THE DATA BASE

The data base used in this paper was compiled from various Statistics Canada sources. These sources include The Census of Forestry, Mines, and Manufactures, the CANSIM computer database, and numerous Statistics Canada hard copy catalogues.[2] The time period examined runs from 1971 through to 1984, although a number of series extend back as far as 1965. Due to the inevitable lags in producing reliable statistics (especially in the detail needed here), 1984 was, in general, the last year in which data were available. However, forecasts and/or estimates for 1986 and 1987 have been included whenever possible.

The study compares the mineral industry in Canada to three other broad resource aggregates: forestry, petroleum and agriculture. Comparisons are made at the primary, processing and fabricating stages of activity. The assignments to the various stages were based on Energy, Mines and Resources (EMR) definitions for the mining industry which we modified to accommodate the remaining sectors in the study.[3]

The component industries (which make up the three stages of activity for each of the four broad resource aggregates) are set out in the following matrix.

Stage	Agriculture	Forestry	Minerals	Petroleum	Total
Primary	farming fishing trapping	logging	metals non-metals coal quarries	petroleum natural gas	Total Primary Activity
Processing	food beverage tobacco leather	wood	primary steel smelting refining	refineries petroleum products	Total Processing Activity
Fabricating	N/A	pulp paper non-metal minerals	primary metals (excluding stage 2 activities) wire products	N/A	Total Fabricating
	Total Agriculture	Total Forestry	Total Minerals	Total Petroleum	Total

---

[2] A description of the precise source of each series in given in Appendix A.

[3] D.J. McCulla and L.K. Tibbo, "The Canadian Non-Fuel Mineral Industry Defined", Energy, Mines and Resources Canada, 1978.

All component industries listed in the matrix are defined according to the Standard Industrial Classification Codes (1980 edition) of Statistics Canada. As with any system of assigning industries to stages of activity, ours is not without a certain amount of arbitrariness. While our system works well for the mineral sector (for which it was originally designed), the other sectors proved problematic at times. This is especially true of the processing and fabricating stages. For example, many of the activities that are assigned to the processing stage of agriculture could have been placed in the fabricating stage. The coffin and casket industry, which is assigned to the second stage of forestry, properly belongs in the fabricating stage of activity. In most cases this problem arose because of data limitation factors. Either Statistics Canada data was not available in disaggregated form or the actual production itself was not amenable to the breakdown into the defined stages. In cases where either of these situations arose, the industry was assigned to that stage where the majority of its activity took place.

A more comprehensive description of the nature of each stage of activity and its component industries is given below. Bracketed numbers refer to 1980 SIC codes.

(A) Primary (stage 1): involves the most basic activity or the furthest "backward link" in the industry chain of production. For each of the four industries the following activities are included in the primary stage.

Agriculture - farming (field, fruit and livestock) (01)
- fishing, trapping (03)
- services incidental to agriculture (02)

Forestry - logging (04)
- forestry services (05)

Mining - mines (including milling) and quarries (06, 08)
- Involves the discovery and extraction of ore and the treatment of ore to the concentrate stage for each of the subdivisions previously delineated i.e. metals, non-metals, quarries and coal. Some of the minerals within these subdivisions include:

Metals (061)	Non-metals (062)	Quarries (08)	Coal (063)
Gold (0611)	Asbestos (0621)	Stone Quarries (081)	Coal (063)
Copper (0612,0613)	Peat (0622)	Sand Pits (082)	
Zinc (0612,0614)	Gypsum (0623)	Gravel Pits (082)	
Nickel (0613)	Potash (0624)		
Lead (0614)	Salt (0625)		
Silver (0614)			
Molybdenum (0615)			
Uranium (0616)			
Iron Ore (0617)			

Petroleum - crude petroleum (07)
- natural gas (07)
- services incidental to mineral extraction (09)

- Involves the discovery and extraction of petroleum and natural gas from wells or surface shales or sands.

Services incidental to each industry are also included at this stage. In agriculture these services include such activities as threshing, crop dusting and veterinary services. In forestry, fire fighting, tree nurseries and reforestation services are included. The Statistics Canada classification "Services Incidental to Mining" includes services for both mining and petroleum. A more detailed breakdown was, unfortunately, not available and hence these services were grouped together in the petroleum category. This was in accordance with EMR's definitions and was based on the fact that the vast majority of activity (up to 95 percent) of this group is involved in providing petroleum-related services. Activities here include contract drilling for petroleum and natural gas wells, oil field construction, as well as mine exploration and development services. However, geophysical, gravimetric and seismographic services are not included in this group.

(B) Processing (stage 2): involves the refinement of the basic product from the primary stage up to the fabricating stage. Activities specific to each industry are as follows.

Agriculture - food and beverage industries (10,11)
- tobacco industries (12)
- leather industries (17)

- Involves activities from killing and dressing through to processing and packing.

Forestry - wood industry (25)

- Involves activities such as sawing, planing and lathe work that brings raw logs up to the stage where they are considered as intermediate products (eg. standard matched lumber shingles, panels, etc.). Also included is the coffin and casket industry.

Mining - primary steel industries; smelting and refining (291,295)

- Involves refining of the ore concentrate to a pure metal or alloy state. Includes smelting, roasting, leaching and calcining.

Petroleum - petroleum and coal products industries (36)

- Involves refining crude petroleum, producing gasoline and other fuel and lubricating oils. Due to data limitation problems, "miscellaneous coal products" were also included in this category. However, this group averages only one to three percent of the total category.

(C) Fabricating (stage 3): involves the shaping of materials into forms for other uses. Activities specific to each industry are as follows.

Forestry - paper and allied industries (27)

- Includes pulp and paper mills, paper box and bag manufactures, misc. paper converters and asphalt roofing manufacturers.

Mining - primary metal industries (excluding stage 2 activity) (29)
- wire and wire products manufacturers (305)
- non-metallic mineral product industries (35)

- Involves the shaping of various metals into bars, rods, plates, sheets and wire. Includes iron casting, as well as aluminum, copper, zinc and other metal shaping. The non-metals include clay products, cement and concrete manufacturers, as well as stone, lime and glass product establishments.

This stage contains only forestry and mining; no comparable activities could be established for agriculture or petroleum.

Finally, note that the petroleum and natural gas industry, normally included in the Mineral Fuels category together with coal mines in Statistics Canada's definitions, was separated out for this study. This was done partly because of the distinct physical characteristics of the petroleum industry with respect to uses, extraction, and market structure, and partly to highlight the increased importance of the coal industry in its own right after the oil price shocks of the seventies.

3. THE MACRO DATA

Gross Output

Gross output is defined here as "the value in the market of all the goods and services (commodities) produced during a period of account, including work-in-progress and products for use on own account".[4] The following section examines gross output in terms of nominal dollars, constant 1986 dollars, and finally as an output index. The constant dollar series was derived via the use of the GNE (1971 = 100) price deflator.[5] This deflator was chosen over other deflators such as the Consumer Price Index because it was felt it best encompassed the price changes in all industries, and was therefore more representative of the economy as a whole. In fact, all the constant dollar series in this study were derived using the GNE price deflator. The only exceptions to this are the constant dollar wage series, where it was thought the Consumers Price Index would be more appropriate, and the GDP series, which was deflated using the GDP implicit price index (1981 = 100).

The output index figures were derived from the constant 1971 price series in Statistics Canada Catalogue 61-213. This series "represent(s) the revaluation of quantities of production using prices of a base period"[6] (in this case 1971). Thus the 1971 price for each commodity is multiplied by current year quantities of production to yield a real value of output. By utilizing a constant price series, any year to year changes in an industry's output value can be attributed to real (non-price) fluctuations. The indexes for both gross output and GDP are expressed using 1972 = 100 as the base year. The reader is cautioned from assigning absolute values to these index figures. They show only relative values measured against each industry's respective 1972 base. One cannot, therefore, compare one industry's value in a given year to another industry.

The constant price series should not be confused with the constant 1986 dollar series discussed in the first paragraph. The latter was derived from the current dollar series and deflated using a general price deflator (GNE or GDP). This removes the effects of changes in the general level of prices in the economy, but allows the relative prices of commodities to vary. The constant price series holds relative prices constant over time.

Figure 1[7] illustrates gross output of primary activity for the four resource sectors. Unfortunately, 1983 data was the most recent available for the current and constant 1986 dollar series for gross output. All sectors showed stable upward trends throughout the early seventies with petroleum showing the strongest growth, surpassing mining's contribution in 1974-75. From 1978 to 1980 all industries except forestry had strong growth rates. However, while the petroleum industry continued to grow through to 1983, mining reached its peak output level of 13.2 billion (current) dollars in 1980 with forestry and agriculture also leveling off or declining slightly. Mining's output value actually declined for the first time in 1981, bottoming out in 1983 at 10.1 billion dollars.

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[4] Statistics Canada, System of National Accounts, Catalogue 61-213, 1984, p. 229.

[5] In 1986 Statistics Canada stopped using the GNE deflator, favouring the newly created GDP implicit price index. The GNE deflator used here was therefore estimated for the years 1986 and 1987 by using the percent changes in the GDP index as a proxy.

[6] Statistics Canada Catalogue 61-213, p. x.

[7] A cross-reference number is provided at the bottom right-hand corner of each graph. The number refers to the table, located at the end of each section, from which each graph has been derived.

Figure 2 expresses gross output in the primary stage in constant 1986 dollars. Petroleum still shows a strong growth rate over the entire period; however, the other industries fare less well. Mining exhibited moderate growth (with the exception of 1975) through to 1978. In the next two years it expanded rapidly, but then fell from 1980 to 1983. Agriculture's growth was cyclical in nature, with expansions in the early seventies and again in the late seventies and early eighties. Forestry showed some sign of growth in the late seventies, but closed out 1983 below the level it attained a decade earlier.

Figure 3 shows the output index for each industry. While the mining industry got off to a strong start from 1972 to 1977, it subsequently fell to a level below that of its 1972 value. The average index level for mining over the 1972-1984 period was 107.3. Agriculture finished with a 119.4 average, forestry with 112.7 and petroleum at 107.7. The economy-wide average index level over that period (not shown in figure 3) was 124.9, well above that of any of the four resource sectors.

The two pie charts in figure 4 illustrate how the composition of the resource sector has changed between 1971 and 1983. While each of the four industries and total resources output has grown in absolute terms (expressed in 1986 constant dollars), the relative changes that have taken place are fairly dramatic. Not surprisingly, petroleum has grown in relative size since 1971. However, the size of that growth is striking. From an 18.9 percent share in 1971, petroleum moved to a 45.1 percent share in 1983. This has cut into the other three industries' share, with mining and agriculture each falling by over ten percentage points and forestry by just under five percentage points.

Figure 5 shows the breakdown of the mining industry's performance according to the subdivisions cited in the previous section. As can be seen, metal mining dominates all other activities and was primarily responsible for the surge in the value of mining output that took place from 1978 to 1980, as well as the subsequent decline in the early eighties. Most of this rise was due to increases in the price of metals, as will be seen in the following graphs.

Figure 6 shows mining output in constant 1986 dollars. Despite two surges of growth in 1972-73 and again in 1978-80, metal mining has had a flat trend. This trend shows up even more clearly when looking at the output index in figure 7. Metal mining showed the least growth of all the mining industries, with average index level of only 102.8 for the 1972-84 period. This compares with coal, with the strongest output growth, with an average of 164.8, non-metal mines at 112.3, and quarries with 103.8. Figure 8 illustrates the percentage changes in the Real Metal

Price Index[8] versus the GNE deflator and the Consumers Price Index. The huge price increases in metal prices in 1973 and 1979-80 are clearly evident, even after being adjusted for inflation via the GDP implicit price deflator.

In processing activity (figure 9), agriculture dominated the other three sectors, showing strong and stable growth over the entire period, rising from 11.5 to 42.5 billion current dollars of output. This stability should not be surprising, given the broad definition of this sector alluded to earlier. The mining sector showed more moderate growth, dipping only slightly in 1982 from its peak of 11.6 billion dollars in 1981. Forestry closely followed mining's lead until 1979 (9.2 billion) when it began a moderate decline through to 1982. Except for 1980-1981, processing activity in the petroleum industry failed to keep pace with the rapid growth illustrated in the primary stage. Processing activity in the resource sector overall remained fairly stable over the fifteen years, fluctuating only slightly about the 10 percent mark of total output in the economy.

Figure 10 shows the processing stage in constant dollars. Although all the trends are much less pronounced here, the same patterns that were established in nominal dollars are still present. The production index in figure 11 shows a much different story. All industries except agriculture fluctuated widely in a cyclical manner with peaks in 1973-74 and 1979-80. Interestingly, petroleum has failed to rebound from the recessionary drop and as of 1984 was still at production levels below that of 1973. The stability in agriculture is in sharp contrast to the other resource industries. Apart from the more diverse nature of this category alluded to above, the less volatile demand for processed agricultural products is also responsible for the stability in this industry. Also of note is the fact that, as in the primary stage of activity, none of the resource industries has managed to keep pace with the growth of the all-industry average (not shown).

Petroleum's relative share of total resource processing has also risen, as highlighted in figure 12, although less strikingly than in the primary stage of activity. Agriculture has lost the largest amount, roughly ten percentage points and minerals fell slightly from 17 percent in 1971 to 12 percent in 1983. Forestry has fluctuated about the 11 percent mark, rising to nearly 14 percent in 1979.

The fabricating stage is represented in figure 13. Both forestry and mining trended upward in the seventies with forestry showing slightly stronger growth in the latter half of the decade. Both industries peaked in 1981, forestry at 16.5 billion and mining at 11.3 billion current dollars. The constant 1986 dollar series highlights the cyclical nature of the two industries. In constant dollar terms, mining actually reached its peak output level in 1979, forestry in 1980. The output index for fabricating is shown in figure 15. Production levels for minerals in 1982-83 dropped below those attained in 1971, although they had been falling since 1979. However, signs of recovery were beginning to show as early as 1983.

In figure 16 the sub-industry breakdowns for forestry and minerals are shown for the year 1982. As can be seen, forestry fabricating is dominated by pulp and paper mills, which accounted for over 72 percent of forestry's fabricating output value. Minerals' output value was split into three groups. Primary metals (less processing activity) accounted for 35.5 percent of fabricating output and includes iron foundries as well as metal rolling and casting. Non-metal products (49.3 percent), which include clay, cement, stone, sand, lime and glass products, made up the largest share of mineral fabricating, while wire products totaled 15.2 percent.

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[8] This index was developed by the Mineral Policy Sector at Energy, Mines and Resources Canada. It includes copper, iron ore, zinc, gold, nickel, silver, lead and molybdenum which are weighted according to production. Nominal values are adjusted using the GDP deflator.

Total activity (figure 17) for all four industries showed remarkably stable growth patterns over the decade of the seventies. Not until 1978-79, when petroleum surpassed forestry and mining, which had both begun to decline, was there any change in relative positions. Resources combined to make up roughly 20 percent of total output for the economy over the entire period. Mining went from a 4.9 percent share of total output (25.3 percent of resources) in 1971 to a 3.6 percent share (17.5 percent resources) in 1983, peaking in 1980 at a strong 5.0 percent (of total output). The numbers for forestry are 4.2 percent (21.4 percent) in 1971 and 3.7 percent (18.1 percent) in 1983; for agriculture, 8.1 percent (41.8 percent) in 1971 and 7.1 percent (34.7 percent) in 1983; and finally, for petroleum, 2.3 percent (11.6 percent) in 1971 and 6.1 percent (29.7 percent) for 1983.

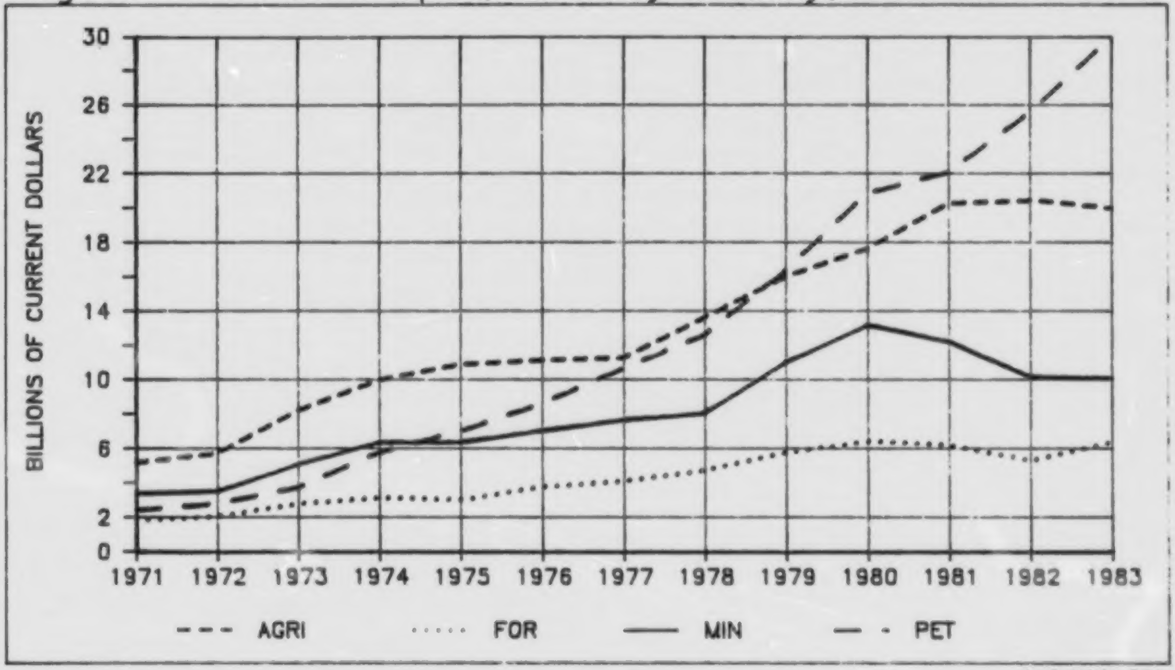
Slight cyclical patterns can be seen in all industries except petroleum in figure 18. Agriculture, minerals and forestry all had moderate rises in output value until the early eighties. Petroleum continued to rise through to 1983. The output index for total activity (figure 19) again demonstrates the cycles that resource production follows. The mineral industry was hardest hit by the recession in the eighties (in terms of output effects), while agriculture showed the least effects. Mineral output had the lowest index average for the period at only 109.3. This compares to 111.9 for petroleum, 114.4 for forestry, and 116.0 for agriculture. The economy-wide average was 124.9, well above the level of all four resource industries.

The bar chart in figure 20 depicts the growth rates for each of the four resource industries over the period 1972-1983. Growth rates are defined as the percentage change over the previous year and are based on the 1986 constant dollar series to remove any distortions due to inflation. The four resource industries tend to move together in the same general direction, but differ substantially in the size of the growth rates. The most prominent features of the chart are the large increase in petroleum growth in 1974 and the dramatic decline in minerals in 1982. The line running through the chart displays the growth rate of gross output for the economy as a whole.

The last graphs in this section illustrate the mineral industry broken down into the three stages of activity. The current dollar series is shown in figure 21. While all three stages trended upward overall, there has been tremendous volatility in the post 1978 period. Primary activity shot upwards until 1980, again reflecting the growth in metal mining. All stages of the mineral industry have experienced rough times in the early eighties with only moderate recovery beginning in 1983. Graphs 22 and 23 illustrate the constant dollar and output index for the mineral industry. Figure 24 shows the mineral sector as a percentage of total output for the economy. While there have been increases and decreases over the period, the trend is clearly falling.

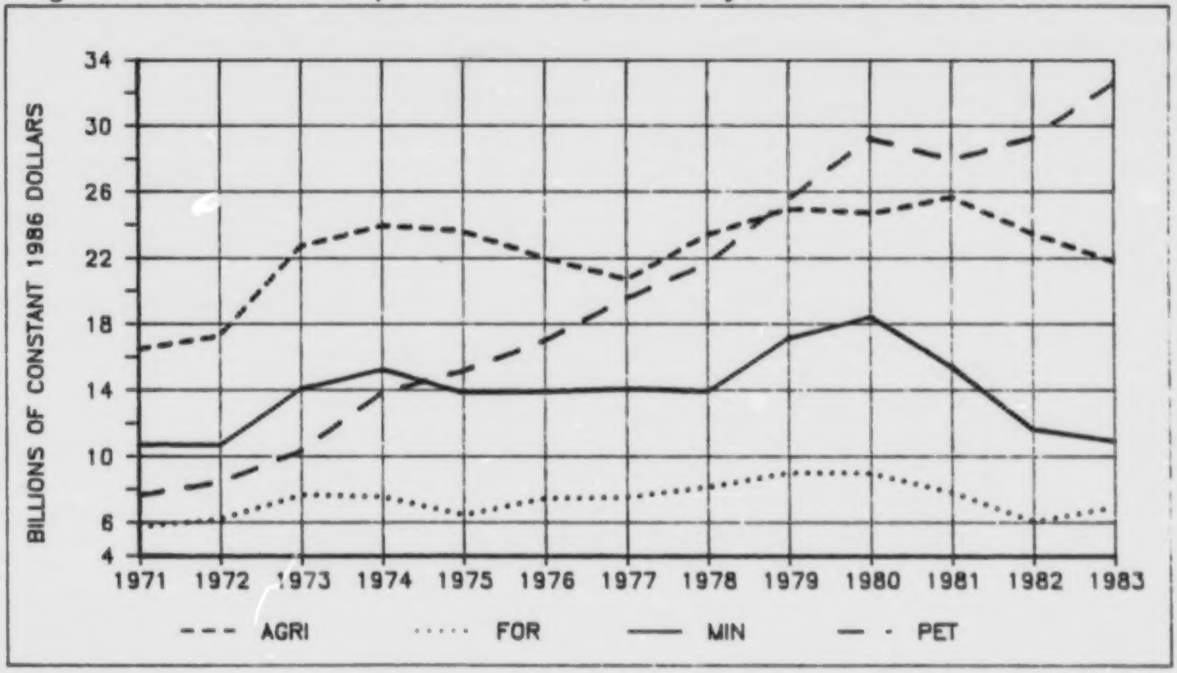
GROSS OUTPUT: Primary Activity

Figure 1. Gross Output, Primary Activity, Current Dollars



(ref: table A1)

Figure 2. Gross Output, Primary Activity, Constant 1986 Dollars

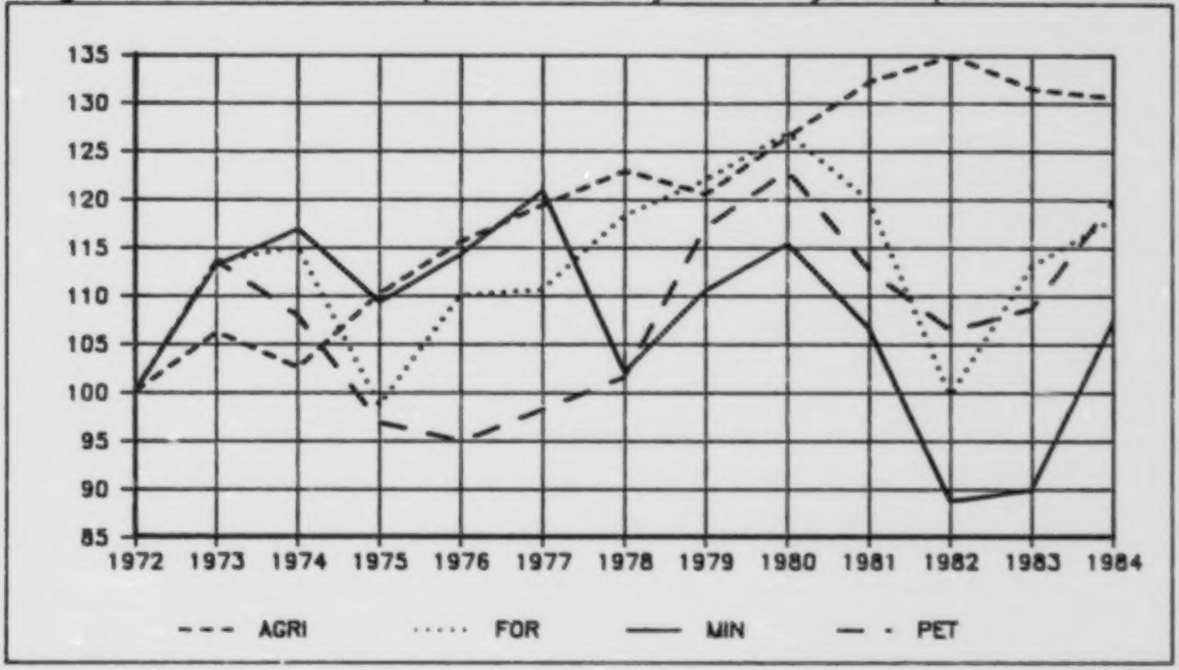


(ref: table B1)

Source: Statistics Canada, Catalogue 61–213.
Constant Dollars Derived Using G.N.E. Deflator

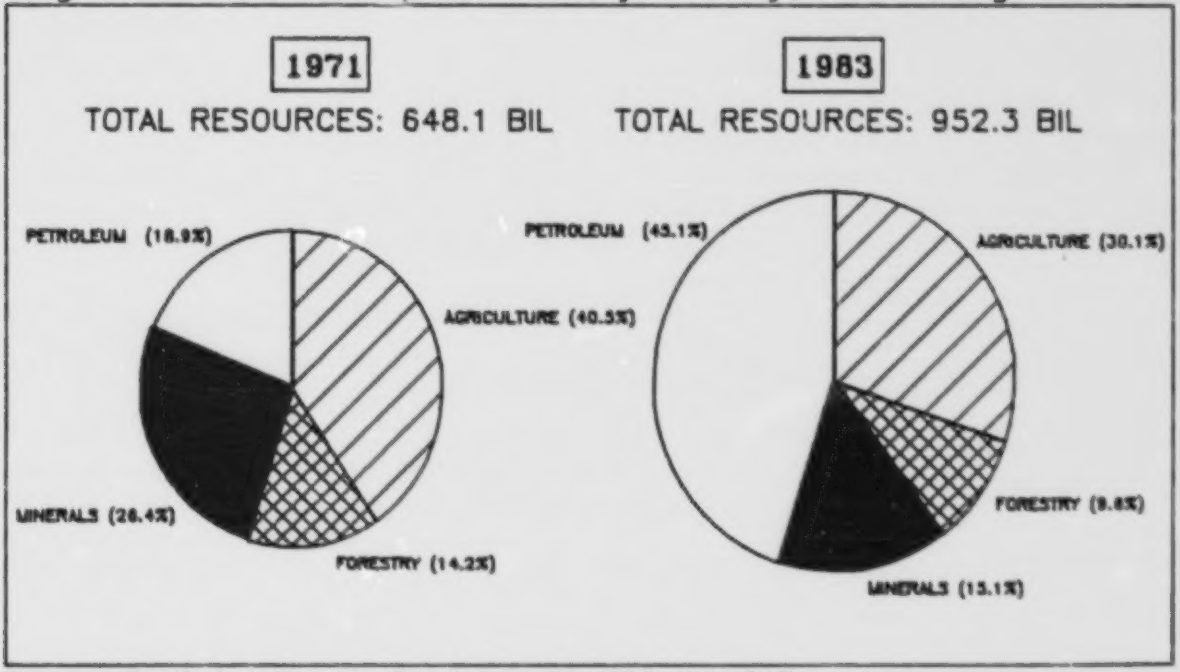
GROSS OUTPUT: Primary Activity

Figure 3. Gross Output, Primary Activity, Output Index



(ref: table C1)

Figure 4. Gross Output, Primary Activity, Percentage Shares

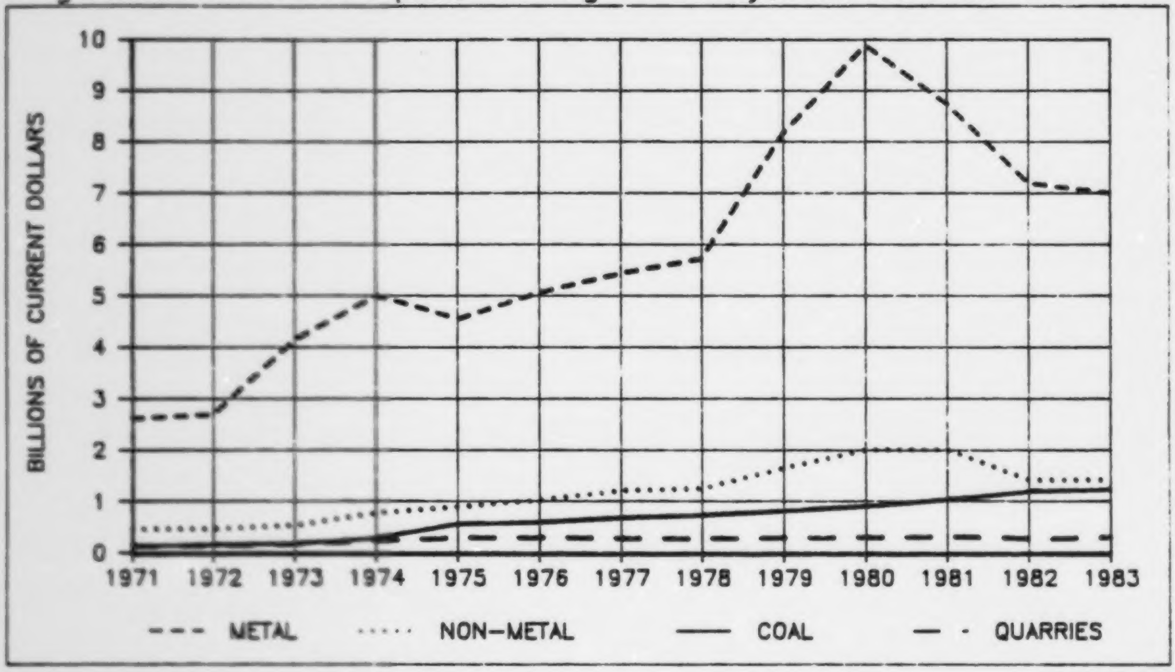


Source: Statistics Canada Catalogue 61-005, 61-213.
Figure 4 Based on Constant 1986 Dollar Series.
Constant Dollar Series Derived Using G.N.E. Deflator.

(ref: table B1)

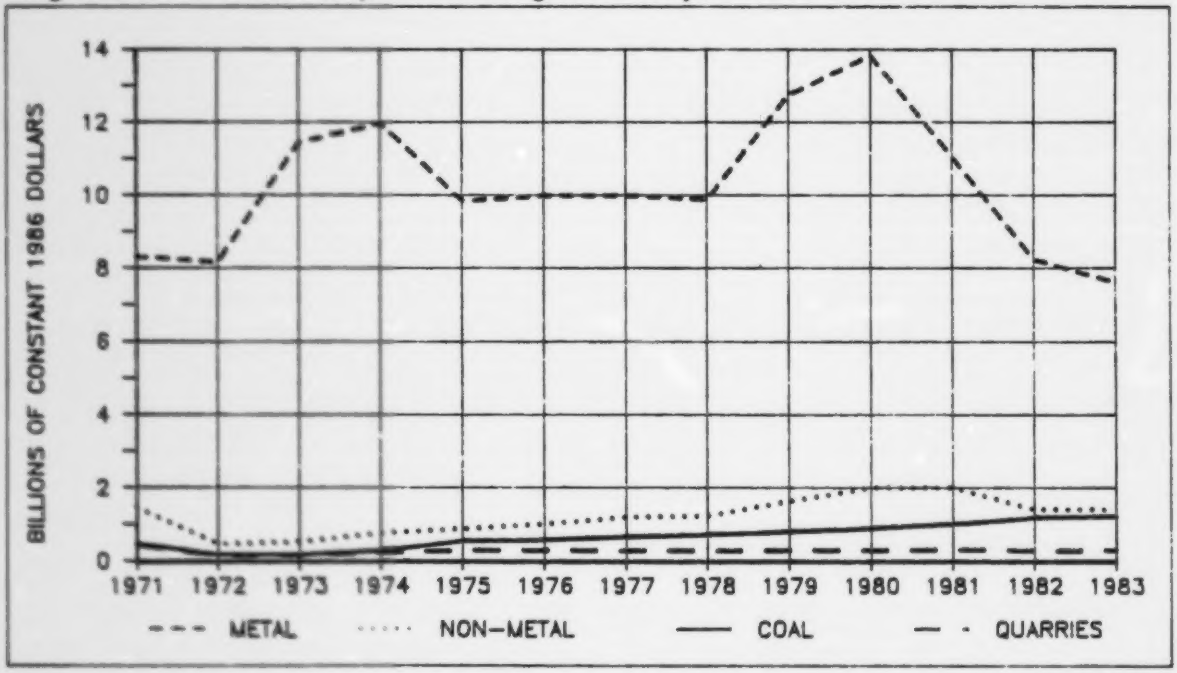
GROSS OUTPUT: Mining Industry

Figure 5. Gross Output, Mining Industry, Current Dollars



(ref: table A2)

Figure 6. Gross Output, Mining Industry, Constant 1986 Dollars

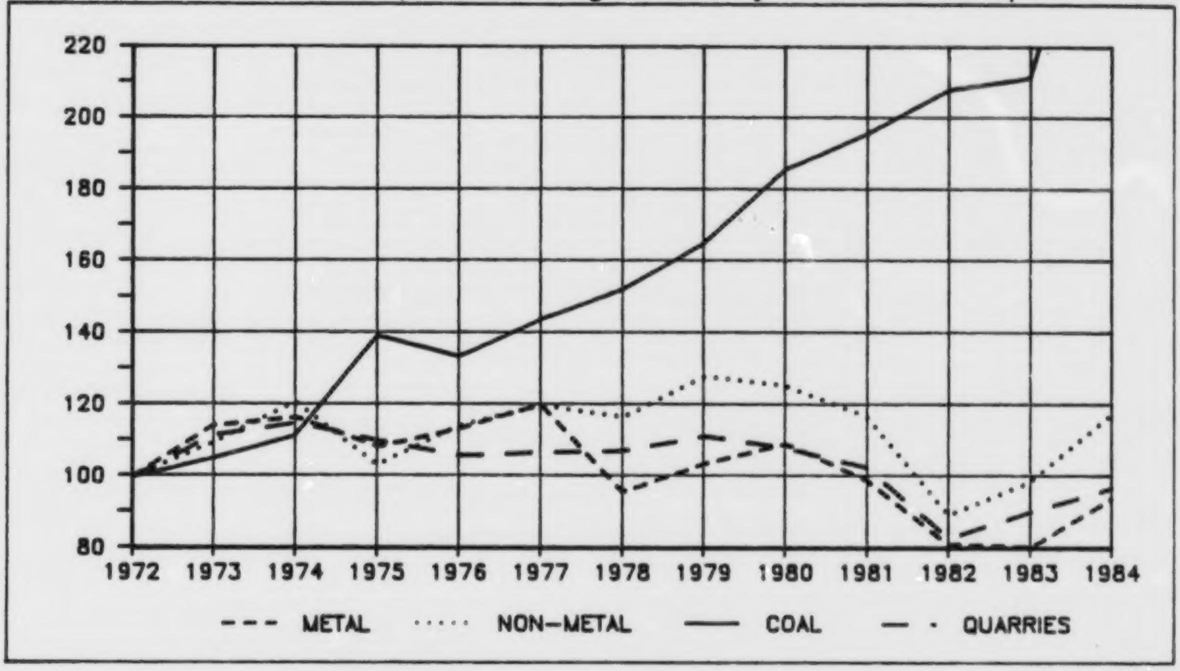


(ref: table B2)

Source: Statistics Canada, Catalogue 61-213.
Constant Dollars Derived Using G.N.E. Deflator

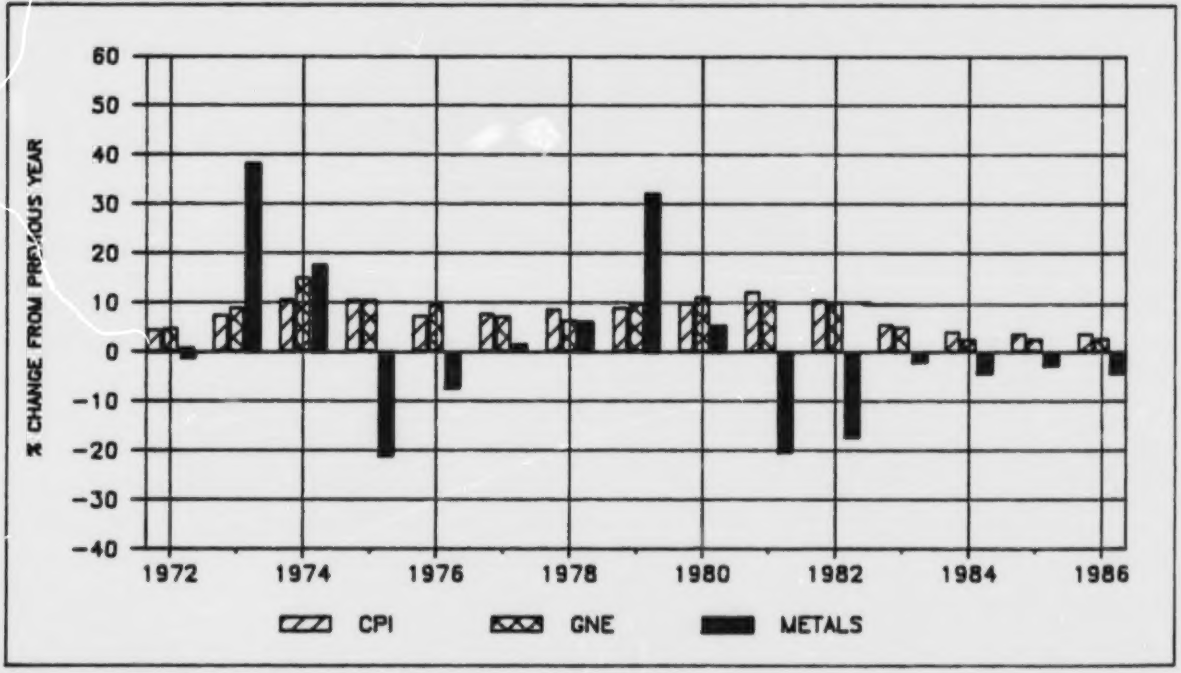
GROSS OUTPUT: Mining Industry

Figure 7. Gross Output, Mining Industry Sector, Output Index



(ref: table C2)

Figure 8. Gross Output, Mining Industry, Price Indices



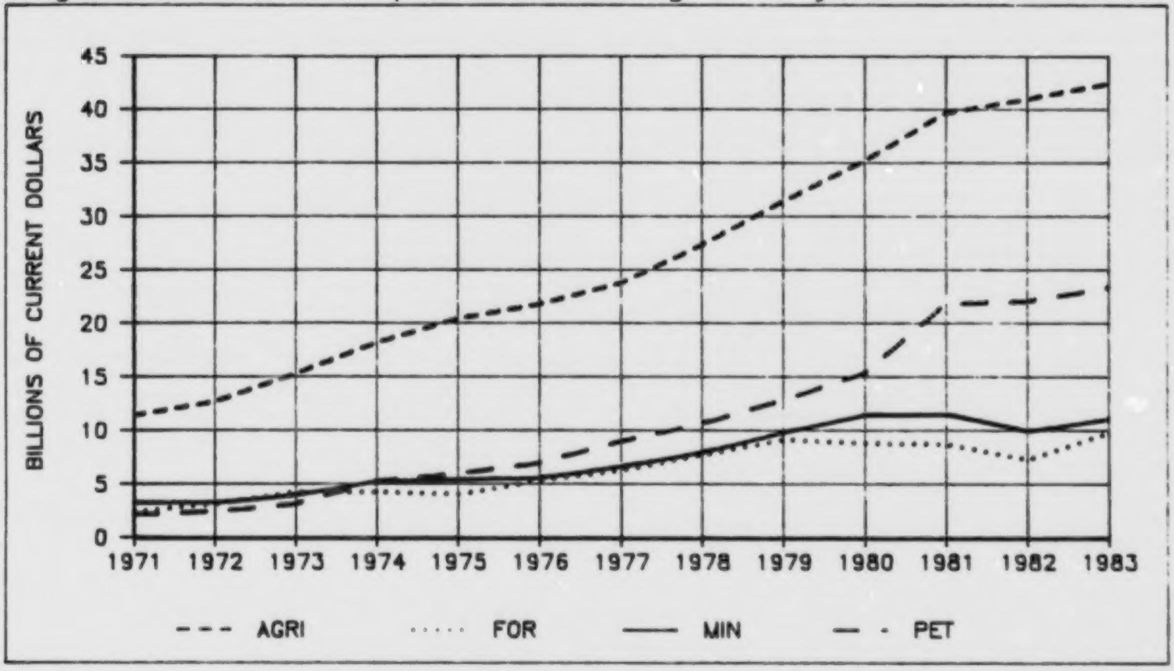
Source: Statistics Canada, Catalogue 61–213.

Metal Index in Figure 8 Developed By Energy, Mines and Resources Canada.

See Text: Page 10 For Description of Metals Index.

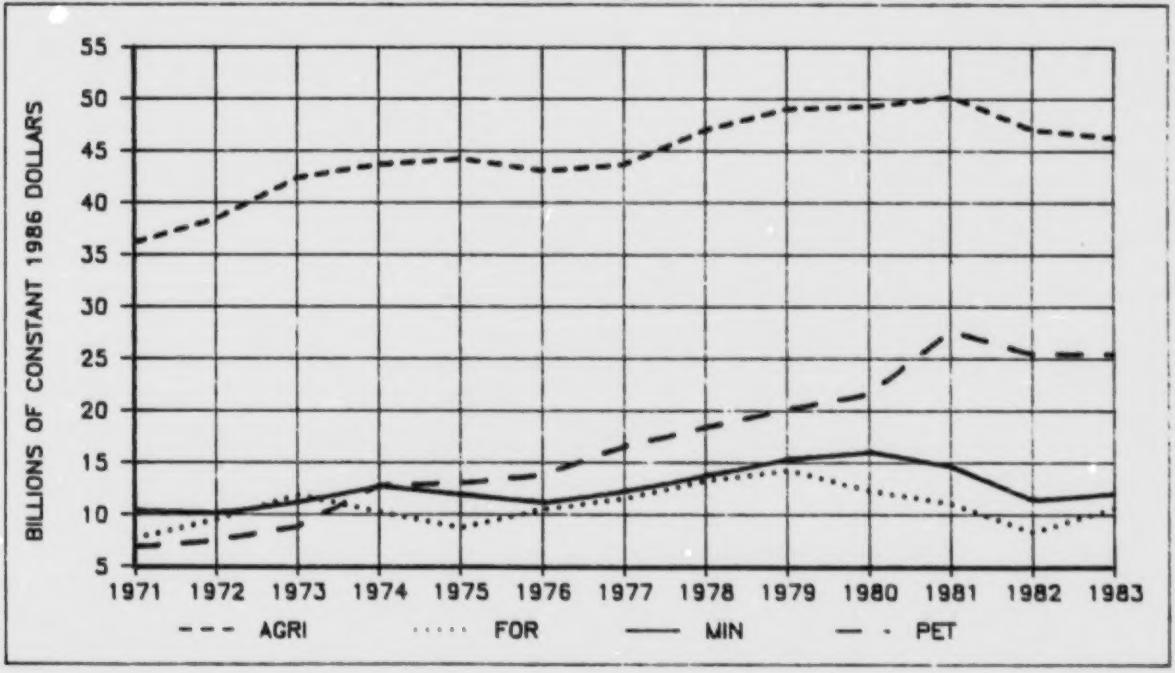
GROSS OUTPUT: Processing Activity

Figure 9. Gross Output, Processing Activity, Current Dollars



(ref: table A3)

Figure 10. Gross Output, Processing Activity, Constant 1986 Dollars

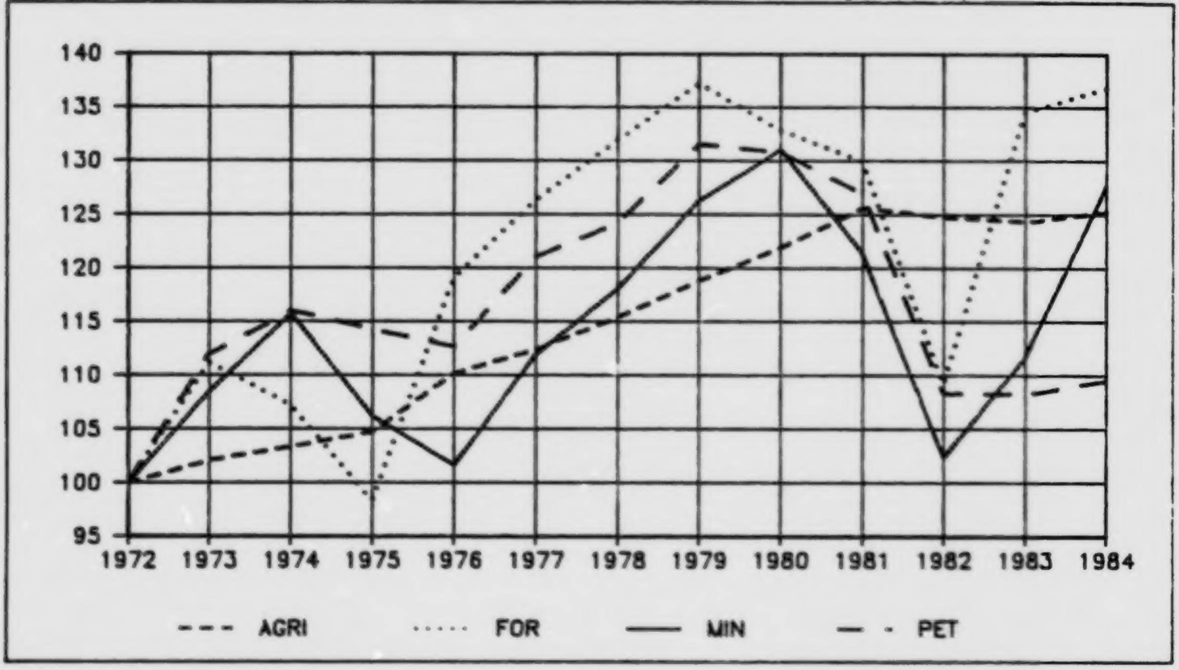


(ref: table B3)

Source: Statistics Canada, Catalogue 61–213.
Constant Dollars Derived Using G.N.E. Deflator

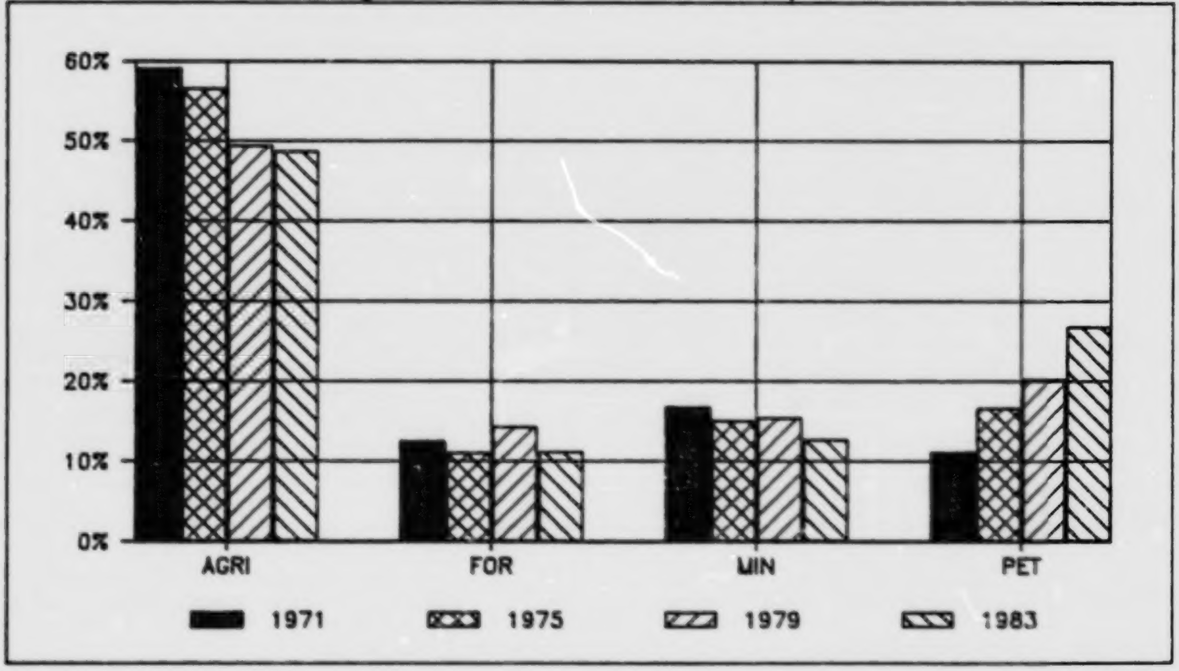
GROSS OUTPUT: Processing Activity

Figure 11. Gross Output, Processing Activity, Output Index



(ref: table C3)

Figure 12. Gross Output, Processing Activity, Selected Years Percentage of Total Resource Output

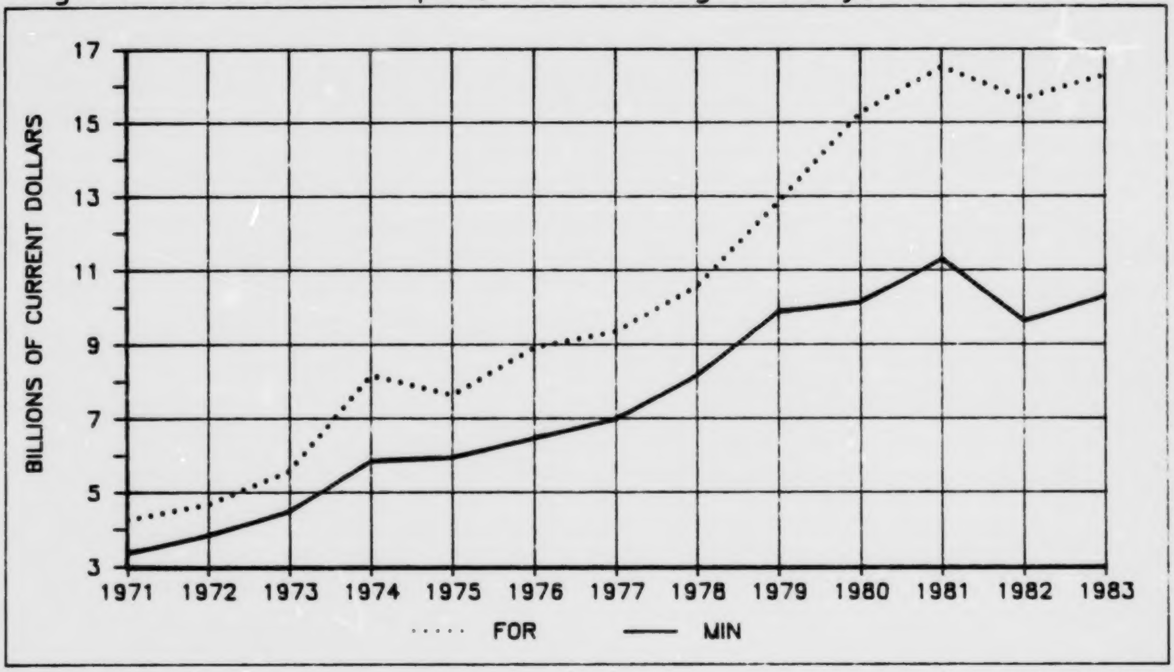


(ref: table A3)

Source: Statistics Canada, Catalogue 61-005, 61-213.
Figure 12 Based on Current Dollar Series.

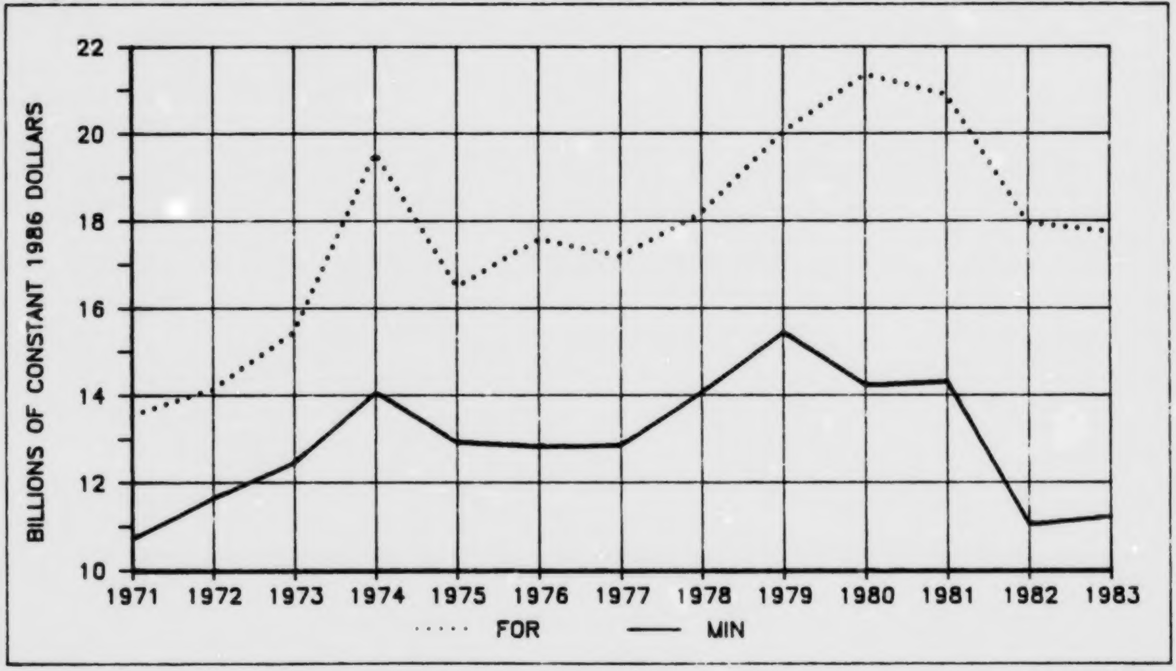
GROSS OUTPUT: Fabricating Activity

Figure 13. Gross Output, Fabricating Activity, Current Dollars



(ref: table A4)

Figure 14. Gross Output, Fabricating Activity, Constant 1986 Dollars

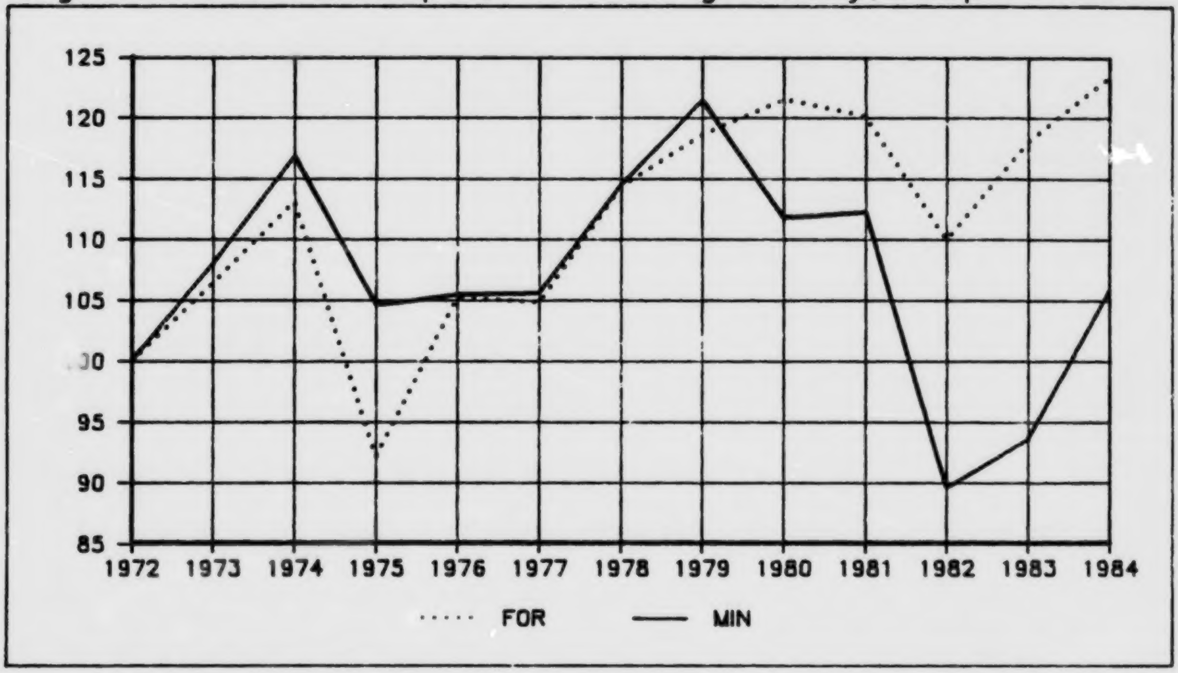


(ref: table B4)

Source: Statistics Canada, Catalogue 61–213.
Constant Dollars Derived Using G.N.E. Deflator

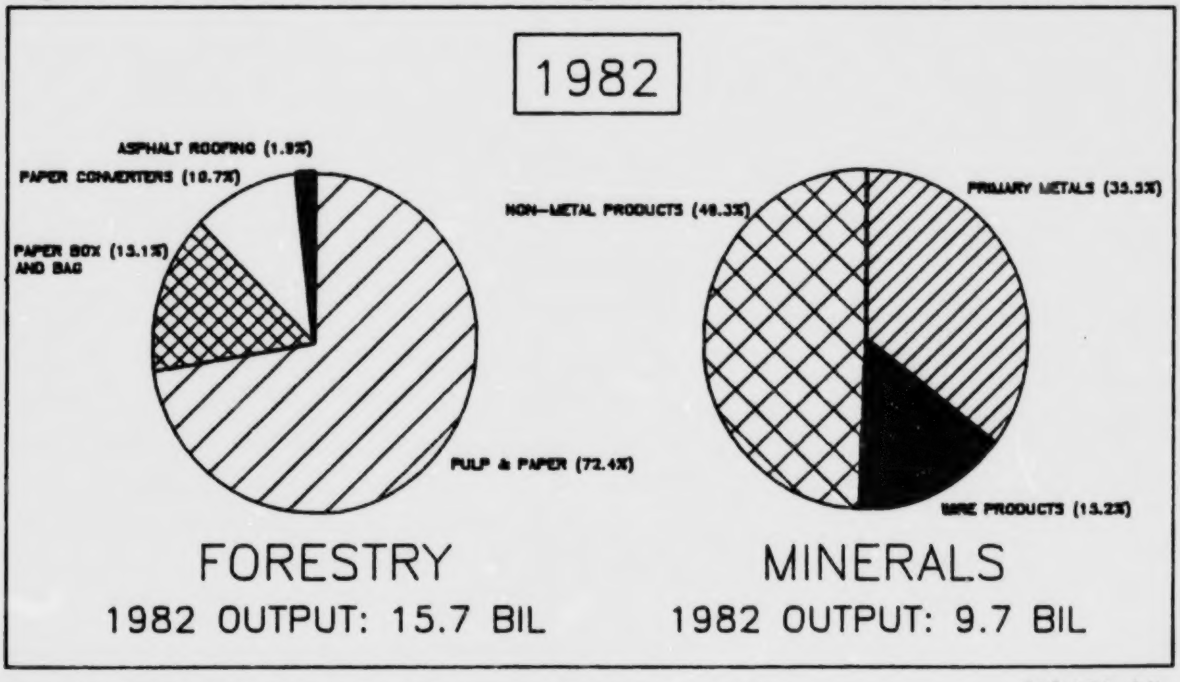
GROSS OUTPUT: Fabricating Activity

Figure 15. Gross Output, Fabricating Activity, Output Index



(ref: table C4)

Figure 16. Gross Output, Fabricating Activity, Sub–Industry Breakdown

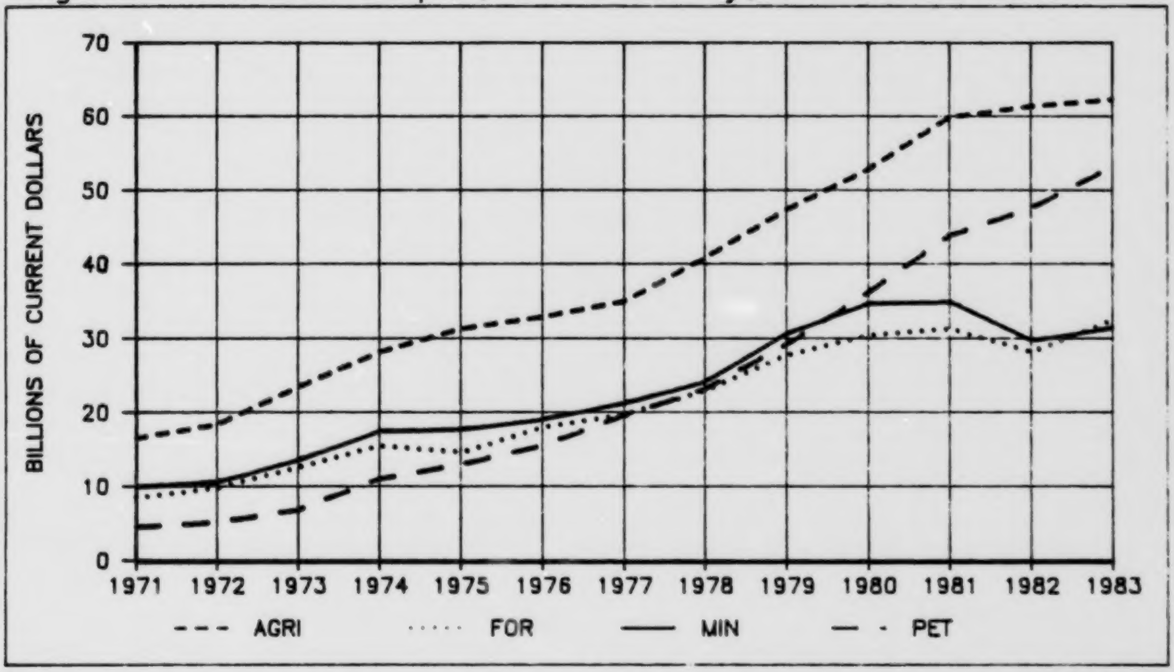


(ref: table A4)

Source: Statistics Canada, Catalogue 61–005, 61–213.
Figure 16 Based on Current Dollar Series.

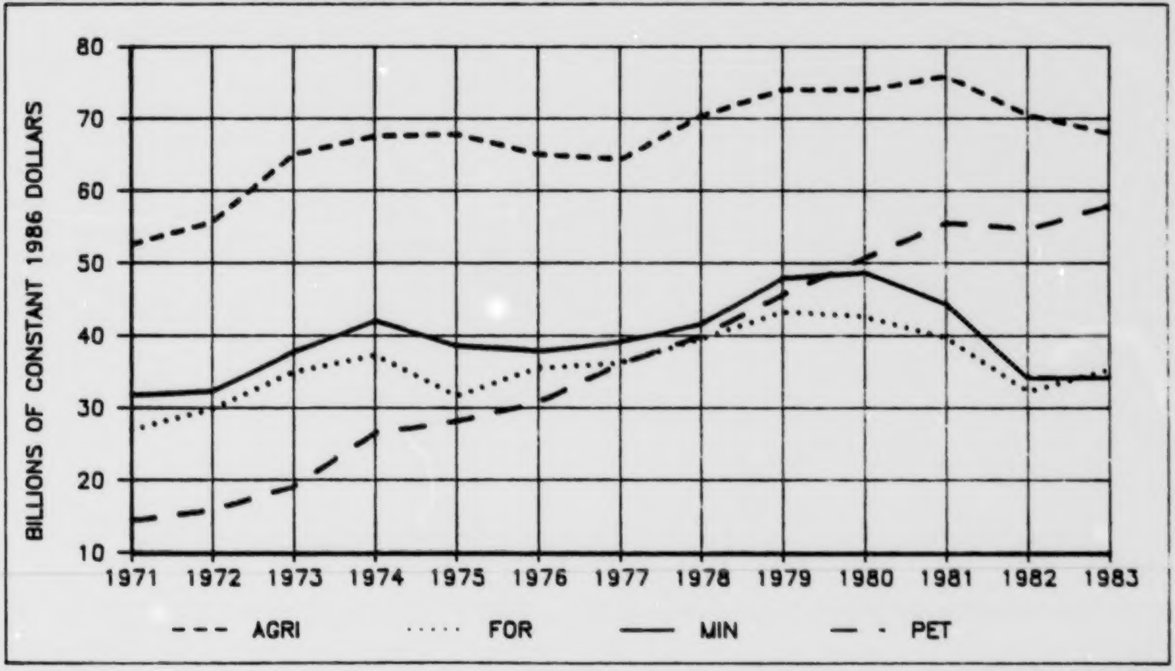
GROSS OUTPUT: Total Activity

Figure 17. Gross Output, Total Activity, Current Dollars



(ref: table A5)

Figure 18. Gross Output, Total Activity, Constant 1986 Dollars

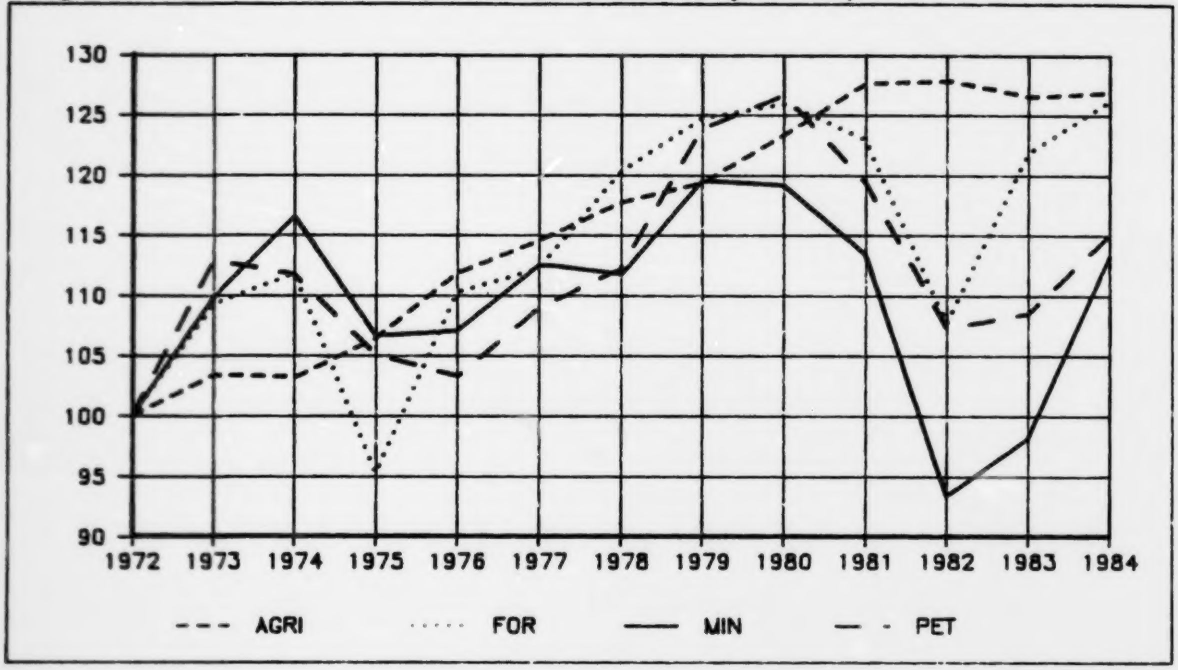


(ref: table B5)

Source: Statistics Canada, Catalogue 61–213.
Constant Dollars Derived Using G.N.E. Deflator

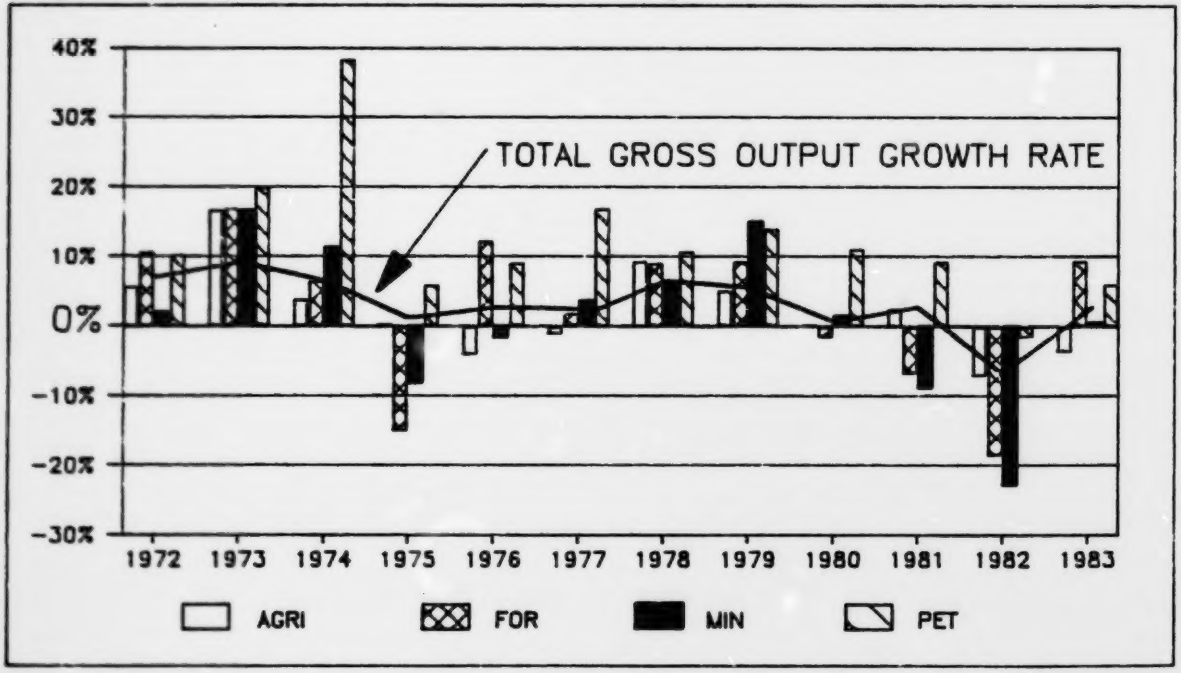
GROSS OUTPUT: Total Activity

Figure 19. Gross Output, Total Activity, Output Index



(ref: table C5)

Figure 20. Gross Output, Total Activity, Growth Rates

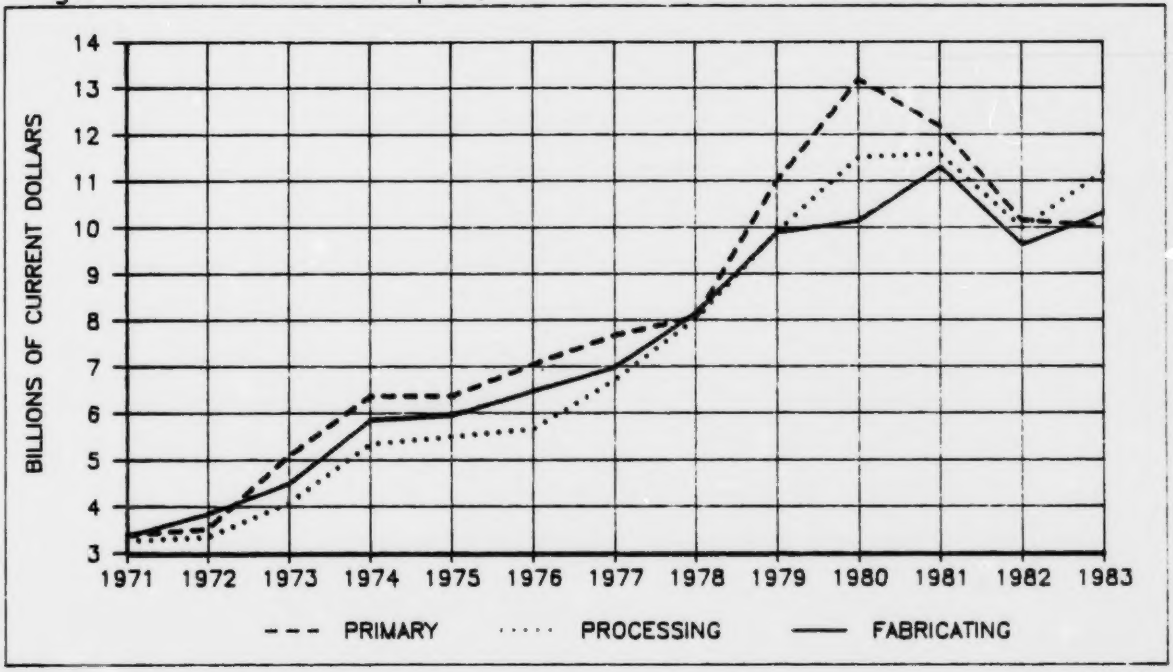


(ref: table B5)

Source: Statistics Canada, Catalogue 61–005, 61–213.
Figure 20 Based on Constant (1986) Dollar Series Using G.N.E. Deflator.
Growth Rate is Defined as Percentage Change From Previous Year.

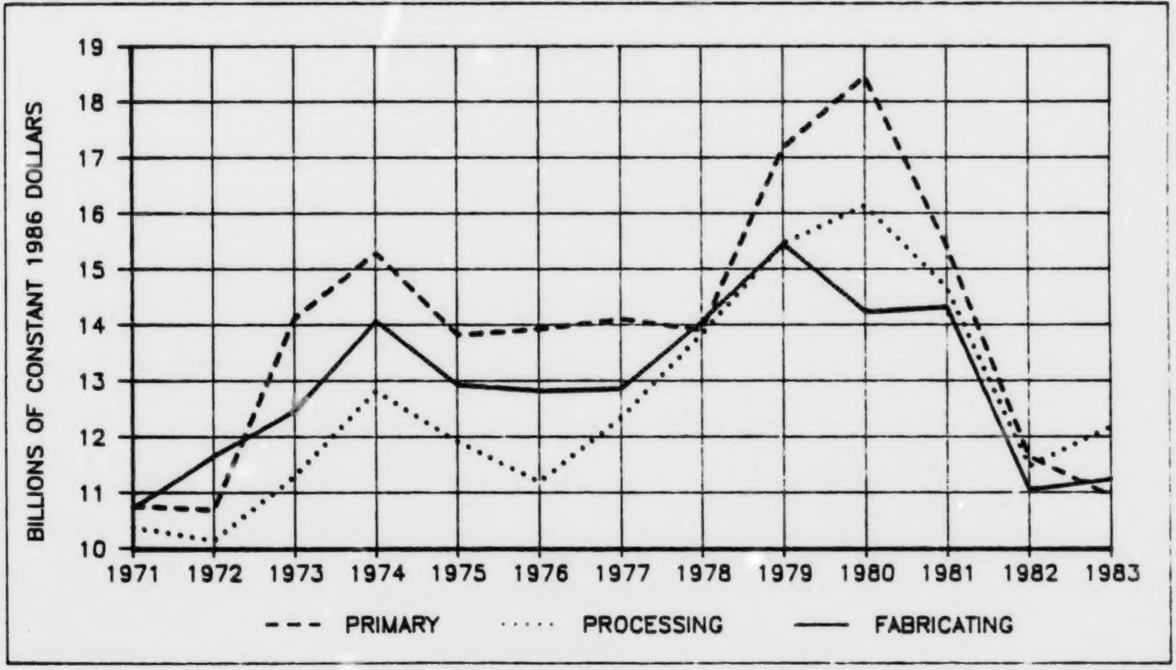
GROSS OUTPUT: Mineral Sector

Figure 21. Gross Output, Mineral Sector, Current Dollars



(ref: table A6)

Figure 22. Gross Output, Mineral Sector, Constant 1986 Dollars

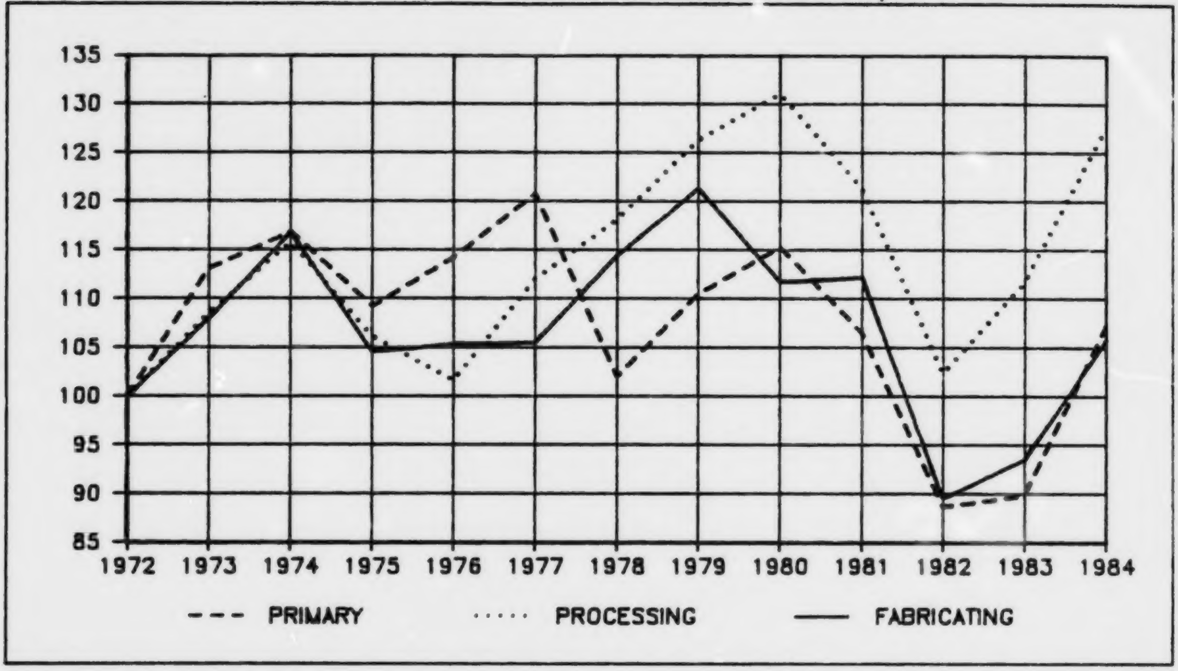


(ref: table B6)

Source: Statistics Canada, Catalogue 61–213.
Constant Dollars Derived Using G.N.E. Deflator

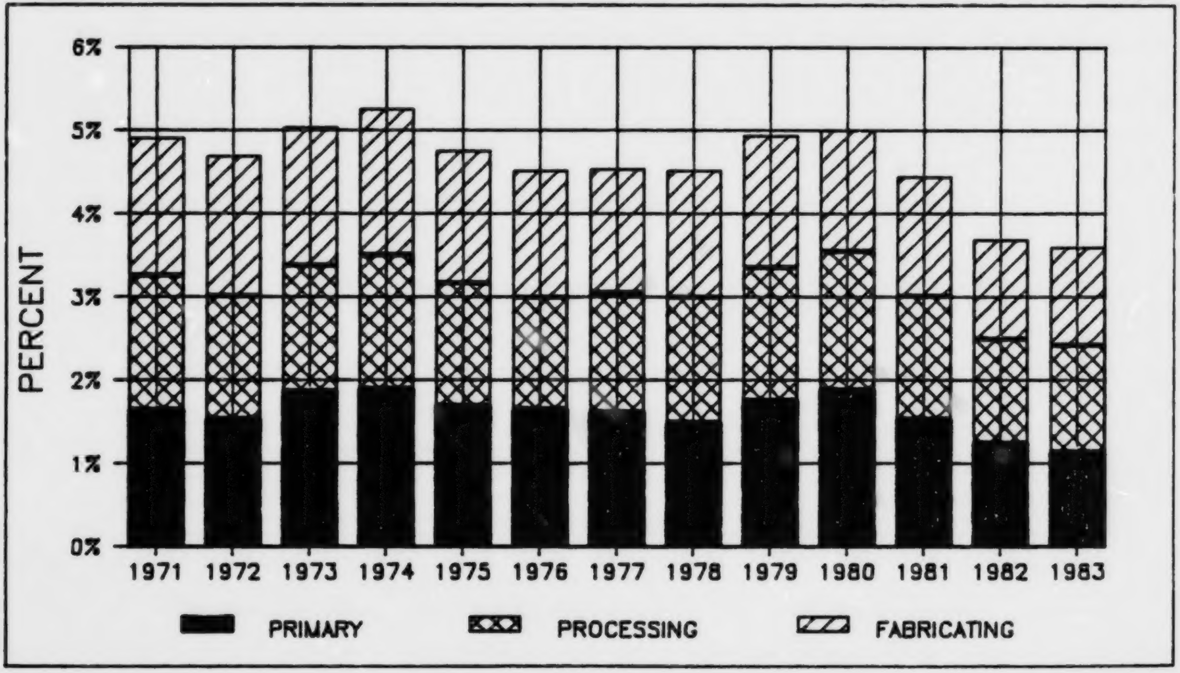
GROSS OUTPUT: Mineral Sector

Figure 23. Gross Output, Mineral Sector, Output Index



(ref: table C6)

Figure 24. Gross Output, Mineral Sector, Percentage of Total Output



(ref: table A6)

Source: Statistics Canada, Catalogue 61–005, 61–213.
Figure 24 Based on Current Dollar Series.

TABLE 1: PRIMARY CURRENT DOLLARS (MILLIONS)

GROSS OUTPUT	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983
AGRICULTURE	5231	5755	8250	10030	10943	11172	11301	13627	16051	17667	20311	20485	19993
FORESTRY	1831	2075	2793	3158	2998	3806	4126	4761	5797	6435	6179	5305	6404
MINERALS	3411	3557	5125	6403	6408	7083	7706	8098	11034	13207	12196	10170	10054
PETROLEUM	2434	2824	3769	5805	7040	8642	10680	12618	16406	20905	22104	25591	29973
GDP (CANADA)	205092	229874	272288	334953	375669	425613	472055	537068	623442	696382	788395	806037	874261

TABLE 2: MINING INDUSTRY CURRENT DOLLARS (MILLIONS)

GROSS OUTPUT	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983
METAL MINES	2643	2720	4165	5020	4575	5090	5463	5755	8198	9903	8755	7209	7014
NON-METAL MINES	470	489	557	795	920	1053	1237	1277	1666	2035	2033	1434	1441
COAL MINES	155	187	214	326	593	623	708	764	848	943	1065	1233	1267
QUARRIES	143	161	189	262	320	317	298	302	322	326	343	294	332
GDP (CANADA)	205092	229874	272288	334953	375669	425613	472055	537068	623442	696382	788395	806037	874261

TABLE 3: PROCESSING CURRENT DOLLARS (MILLIONS)

GROSS OUTPUT	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983
AGRICULTURE	11473	12802	15402	18308	20525	21900	23858	27400	31533	35292	39779	41076	42502
FORESTRY	2449	3187	4325	4292	4067	5377	6341	7752	9205	8825	8764	7294	9864
MINERALS	3290	3375	4104	5365	5523	5690	6741	8056	9930	11542	11609	10018	11200
PETROLEUM	2187	2528	3245	5385	6095	7079	9077	10748	12988	15507	21937	22200	23444
GDP (CANADA)	205092	229874	272288	334953	375669	425613	472055	537068	623442	696382	788395	806037	874261

TABLE 4: FABRICATING CURRENT DOLLARS (MILLIONS)

GROSS OUTPUT	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983
FORESTRY	4293	4709	5612	8187	7645	8935	9382	10590	12867	15278	16521	15661	16307
MINERALS	3399	3881	4531	5893	5991	6516	7026	8199	9926	10183	11339	9652	10346
GDP (CANADA)	205092	229874	272288	334953	375669	425613	472055	537068	623442	696382	788395	806037	874261

TABLE 5: TOTAL ACTIVITY CURRENT DOLLARS (MILLIONS)

GROSS OUTPUT	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983
AGRICULTURE	16704	18557	23652	28338	31468	33072	35159	41027	47584	52959	60090	61561	62495
FORESTRY	8573	9971	12730	15637	14710	18118	19849	23103	27869	30538	31464	28260	32575
MINERALS	10100	10813	13760	17661	17922	19289	21473	24353	30890	34932	35144	29840	31600
PETROLEUM	4621	5352	7014	11190	13135	15721	19757	23366	29394	36412	44041	47791	53417
GDP (CANADA)	205092	229874	272288	334953	375669	425613	472055	537068	623442	696382	788395	806037	874261

TABLE 6: MINERAL SECTOR CURRENT DOLLARS (MILLIONS)

GROSS OUTPUT	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983
MINING	3411	3557	5125	6403	6408	7083	7706	8098	11034	13207	12196	10170	10054
PROCESSING	3290	3375	4104	5365	5523	5690	6741	8056	9930	11542	11609	10018	11200
FABRICATING	3399	3881	4531	5893	5991	6516	7026	8199	9926	10183	11339	9652	10346
GDP (CANADA)	205092	229874	272288	334953	375669	425613	472055	537068	623442	696382	788395	806037	874261

Table B

TABLE 1: PRIMARY ACTIVITY CONSTANT 1986 DOLLARS (MILLIONS)

GROSS OUTPUT	1971	1972	1973	1974	1975	1976	1977	1978	1979
AGRICULTURE	16530.0	17319.8	22748.7	23993.0	23636.3	22009.7	20726.2	23428.4	25022.8
FORESTRY	5786.0	6244.8	7701.5	7554.3	6475.5	7498.1	7567.1	8185.4	9037.3
MINERALS	10778.8	10704.9	14131.8	15316.8	13840.9	13954.0	14132.9	13922.6	17201.5
PETROLEUM	7691.4	8498.9	10392.7	13886.3	15206.0	17025.4	19587.2	21693.6	25576.2
GDP (CANADA)	648090.7	691811.3	750811.6	801250.2	811424.5	838489.5	865753.8	923359.6	971917.5

TABLE 2: MINING INDUSTRY CONSTANT 1986 DOLLARS (MILLIONS)

GROSS OUTPUT	1971	1972	1973	1974	1975	1976	1977	1978	1979
METAL MINES	8351.9	8185.9	11484.6	12008.5	9881.7	10027.7	10019.2	9894.3	12780.3
NON-METAL MINES	1485.2	489.0	557.0	795.0	920.0	1053.0	1237.0	1277.0	1666.0
COAL MINES	489.8	187.0	214.0	326.0	593.0	623.0	708.0	764.0	848.0
QUARRIES	451.9	161.0	189.0	262.0	320.0	317.0	298.0	302.0	322.0
GDP (CANADA)	648090.7	229874.0	272288.0	334953.0	375669.0	425613.0	472055.0	537068.0	623442.0

TABLE 3: PROCESSING CONSTANT 1986 DOLLARS (MILLIONS)

GROSS OUTPUT	1971	1972	1973	1974	1975	1976	1977	1978	1979
AGRICULTURE	36255.0	38527.0	42470.0	43795.8	44333.1	43144.2	43756.6	47107.9	49159.1
FORESTRY	7738.8	9591.4	11925.8	10267.0	8784.5	10593.1	11629.5	13327.7	14350.2
MINERALS	10396.4	10157.1	11316.4	12833.8	11929.4	11209.7	12363.1	13850.4	15480.4
PETROLEUM	6910.9	7608.1	8947.8	12881.6	13164.9	13946.2	16647.3	18478.6	20247.7
GDP (CANADA)	648090.7	691811.3	750811.6	801250.2	811424.5	838489.5	865753.8	923359.6	971917.5

TABLE 4: FABRICATING CONSTANT 1986 DOLLARS (MILLIONS)

GROSS OUTPUT	1971	1972	1973	1974	1975	1976	1977	1978	1979
FORESTRY	13565.9	14171.8	15474.6	19584.3	16512.8	17602.6	17206.7	18207.0	20059.1
MINERALS	10740.8	11680.0	12493.9	14096.8	12940.2	12837.0	12885.8	14096.2	15474.2
GDP (CANADA)	648090.7	691811.3	750811.6	801250.2	811424.5	838489.5	865753.8	923359.6	971917.5

TABLE 5: TOTAL ACTIVITY CONSTANT 1986 DOLLARS (MILLIONS)

GROSS OUTPUT	1971	1972	1973	1974	1975	1976	1977	1978	1979
AGRICULTURE	52785.0	55846.8	65218.7	67788.8	67969.4	65153.9	64482.7	70536.3	74181.9
FORESTRY	27090.7	30008.0	35101.9	37405.7	31772.8	35693.8	36403.3	39720.1	43446.5
MINERALS	31916.0	32542.0	37942.1	42247.4	38710.5	38000.8	39381.7	41869.1	48156.1
PETROLEUM	14602.4	16107.0	19340.5	26767.9	28370.9	30971.5	36234.5	40172.2	45823.9
GDP (CANADA)	648090.7	691811.3	750811.6	801250.2	811424.5	838489.5	865753.8	923359.6	971917.5

TABLE 6: MINERAL SECTOR CONSTANT 1986 DOLLARS (MILLIONS)

GROSS OUTPUT	1971	1972	1973	1974	1975	1976	1977	1978	1979
MINING	10778.8	10704.9	14131.8	15316.8	13840.9	13954.0	14132.9	13922.6	17201.5
PROCESSING	10396.4	10157.1	11316.4	12833.8	11929.4	11209.7	12363.1	13850.4	15480.4
FABRICATING	10740.8	11680.0	12493.9	14096.8	12940.2	12837.0	12885.8	14096.2	15474.2
GDP (CANADA)	648090.7	691811.3	750811.6	801250.2	811424.5	838489.5	865753.8	923359.6	971917.5

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     1980      1981      1982      1983       AVG    C.O.V.

  24724.4   25703.9   23496.4   21778.1   22393.7      12.0
   9005.6    7819.6    6084.9    6976.2    7379.7      13.5
  18482.8   15434.3   11665.0   10951.3   13886.0      16.7
  29255.9   27973.0   29353.0   32648.5   19906.8      41.2
   ------    ------   -------   -------   -------   -------
 974564.7  997728.6  924528.8  952315.0  857849.7      12.6
-----------------------------------------------------------

     1980      1981      1982      1983       AVG    C.O.V.

  13858.9   11079.6    8268.8    7640.0   10267.8      17.9
   2035.0    2033.0    1434.0    1440.9    1263.2      37.7
    943.0    1065.0    1233.0    1267.0     712.4      48.0
    326.0     343.0     294.0     332.0     301.4      22.7
   ------    ------    ------    ------   -------   -------
 696382.0  788395.0  806037.0  874261.3  544932.9      37.5
-----------------------------------------------------------

     1980      1981      1982      1983       AVG    C.O.V.

  49390.0   50340.9   47114.4   46296.5   44745.4       8.9
  12350.3   11091.0    8366.3   10744.2   10827.7      17.1
  16152.7   14691.4   11490.7   12200.0   12620.9      14.4
  21701.6   27761.7   25463.5   25537.1   16869.0      40.0
   ------    ------    ------    ------   -------   -------
 974564.7  997728.6  924528.8  952315.0  857849.7      12.6
-----------------------------------------------------------

     1980      1981      1982      1983       AVG    C.O.V.

  21381.1   20907.6   17963.3   17762.8   17723.0      13.0
  14250.8   14349.7   11070.9   11269.4   12937.4      10.9
   ------    ------   -------   -------   -------   -------
 974564.7  997728.6  924528.8  952315.0  857849.7      12.6
-----------------------------------------------------------

     1980      1981      1982      1983       AVG    C.O.V.

  74114.5   76044.9   70610.8   68074.5   67139.1       9.7
  42737.0   39818.3   32414.4   35483.2   35930.4      12.9
  48886.2   44475.4   34226.6   34420.7   39444.2      13.4
  50957.4   55734.7   54816.5   58185.6   36775.8      40.4
   ------    ------   -------   -------   -------   -------
 974564.7  997728.6  924528.8  952315.0  857849.7      12.6
-----------------------------------------------------------

     1980      1981      1982      1983       AVG    C.O.V.

  18482.8   15434.3   11665.0   10951.3   13886.0      16.7
  16152.7   14691.4   11490.7   12200.0   12620.9      14.4
  14250.8   14349.7   11070.9   11269.4   12937.4      10.9
   ------    ------   -------   -------   -------   -------
 974564.7  997728.6  924528.8  952315.0  857849.7      12.6
-----------------------------------------------------------
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Table C

TABLE 1: PRIMARY ACTIVITY 1972 = 100

GROSS OUTPUT INDEX	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	AVG.	C.O.V.
AGRICULTURE	100.0	106.1	102.4	110.1	115.6	119.4	122.9	120.4	126.4	132.1	134.8	131.3	130.4	119.4	9.5
FORESTRY	100.0	113.5	115.0	98.5	110.0	110.6	118.3	122.0	126.8	119.8	99.6	113.0	117.9	112.7	7.6
MINERALS	100.0	113.1	116.9	109.2	114.2	120.8	102.0	110.5	115.3	106.5	88.7	89.9	107.2	107.3	8.8
PETROLEUM	100.0	113.5	107.8	96.7	94.8	98.2	101.5	117.0	122.9	112.5	106.3	108.6	119.8	107.7	8.1
TOTAL OUTPUT	100.0	108.2	114.1	114.9	120.6	123.6	128.5	134.5	135.2	137.6	129.9	134.5	142.2	124.9	9.7

TABLE 2: MINING INDUSTRY 1972 = 100

GROSS OUTPUT INDEX	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	AVG.	C.O.V.
METAL MINES	100.0	114.3	116.6	108.4	113.5	120.2	95.7	103.7	109.3	99.0	81.1	80.3	94.1	102.8	11.9
NON-METAL MINES	100.0	109.6	120.9	103.3	114.3	120.0	116.6	128.0	125.3	116.7	89.4	98.7	117.6	112.3	9.8
COAL MINES	100.0	105.3	111.6	139.3	133.5	144.0	152.3	165.2	185.8	195.9	208.2	211.6	289.7	164.8	31.0
QUARRIES	100.0	111.7	115.0	110.0	105.9	107.1	107.4	111.4	108.0	102.5	83.0	90.3	96.9	103.8	8.5
TOTAL OUTPUT	100.0	108.2	114.1	114.9	120.6	123.6	128.5	134.5	135.2	137.6	129.9	134.5	142.2	124.9	9.7

TABLE 3: PROCESSING 1972 = 100

GROSS OUTPUT INDEX	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	AVG.	C.O.V
AGRICULTURE	100.0	102.1	103.4	104.8	110.2	112.5	115.5	118.9	121.9	125.6	124.8	124.4	125.3	114.6	8.1
FORESTRY	100.0	111.2	107.2	98.3	119.1	126.4	132.0	137.2	132.8	129.9	109.2	134.6	136.9	121.1	11.3
MINERALS	100.0	108.5	115.8	106.1	101.6	112.0	118.1	126.3	131.1	121.4	102.4	111.7	127.7	114.1	8.7
PETROLEUM	100.0	112.0	116.0	114.3	112.7	121.1	124.3	131.5	130.8	126.9	108.3	108.3	109.6	116.6	7.9
TOTAL OUTPUT	100.0	108.2	114.1	114.9	120.6	123.6	128.5	134.5	135.2	137.6	129.9	134.5	142.2	124.9	9.7

TABLE 4: FABRICATING 1972 = 100

GROSS OUTPUT INDEX	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	AVG.	C.O.V.
FORESTRY	100.0	106.4	113.1	92.0	105.2	104.7	114.3	118.6	121.5	120.0	109.9	118.0	123.3	111.3	8.0
MINERALS	100.0	108.0	116.8	104.5	105.4	105.6	114.5	121.4	111.7	112.3	89.6	93.6	105.8	106.9	8.0
TOTAL OUTPUT	100.0	108.2	114.1	114.9	120.6	123.6	128.5	134.5	135.2	137.6	129.9	134.5	142.2	124.9	9.7

TABLE 5: TOTAL ACTIVITY 1972 = 100

GROSS OUTPUT INDEX	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	AVG.	C.O.V.
AGRICULTURE	100.0	103.3	103.1	106.4	111.8	114.5	117.7	119.3	123.3	127.6	127.8	126.4	126.9	116.0	8.5
FORESTRY	100.0	109.2	111.8	95.2	110.2	112.2	120.2	124.7	125.9	122.8	107.6	121.8	126.1	114.4	8.4
MINERALS	100.0	109.8	116.5	106.6	107.0	112.5	111.6	119.5	119.0	113.3	93.3	98.2	113.2	109.3	7.1
PETROLEUM	100.0	112.8	111.6	105.0	103.2	108.9	112.2	123.8	126.6	119.3	107.2	108.5	115.0	111.9	6.7
TOTAL OUTPUT	100.0	108.2	114.1	114.9	120.6	123.6	128.5	134.5	135.2	137.6	129.9	134.5	142.2	124.9	9.7

TABLE 6: MINERAL SECTOR 1972 = 100

GROSS OUTPUT INDEX	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	AVG.	C.O.V.
PRIMARY	100.0	113.1	116.9	109.2	114.2	120.8	102.0	110.5	115.3	106.5	88.7	89.9	107.2	107.3	8.8
PROCESSING	100.0	108.5	115.8	106.1	101.6	112.0	118.1	126.3	131.1	121.4	102.4	111.7	127.7	114.1	8.7
FABRICATING	100.0	108.0	116.8	104.5	105.4	105.6	114.5	121.4	111.7	112.3	89.6	93.6	105.8	106.9	8.0
TOTAL OUTPUT	100.0	108.2	114.1	114.9	120.6	123.6	128.5	134.5	135.2	137.6	129.9	134.5	142.2	124.9	9.7

Contribution to GDP

While gross output is a good measure of the total amount of activity taking place in the economy, a better guide to the productive nature of that activity is contribution to gross domestic product. GDP is a value added concept; that is, it measures only the value produced at a given stage and/or industry, after subtracting out the cost of intermediate goods and services. Gross domestic product differs from gross national product in that the former includes all productive activity taking place within our borders (i.e. activity of both domestic residents and foreigners within Canada), while GNE measures the productive activity of Canadian residents (and only Canadian residents), regardless of where the productive activity takes place. The GDP numbers quoted here are expressed "at factor cost" which differs from GDP at market prices by the amount of net indirect taxes. Net indirect taxes are taxes assessed on producers, which they charge to the expense of production (including import duties), less subsidies.

Figure 25 illustrates the primary stage of activity in current dollars. Once more it is petroleum that exhibits the strongest growth trend. Mining's contribution to GDP (in current dollars) grew only moderately until 1978 when it accelerated until 1980 and then fell through to 1982. Both agriculture and forestry showed modest gains throughout the period. Primary activity in the resource industries rose slightly as a percentage of total GDP, from 8 percent in 1971 to 9.8 percent in 1983, with a peak of 11.2 percent in 1980. Mining went from 26.9 percent of resources (2.1 percent of GDP) in 1971 to 14.1 percent (1.4 percent) in 1983. Forestry went from 10.1 percent of resources (0.8 percent of GDP) to 6.7 percent (0.7 percent) over the same period. Agriculture went from 42.7 percent (3.4 percent) to 28.5 percent (2.8 percent) and petroleum from 20.4 percent (1.6 percent) to a dominant 50.7 percent (5.0 percent) in 1983.

In constant 1986 dollars (figure 26), petroleum still manages to maintain its strong upward trend. The same cannot be said for the other industries. Forestry hovers between the two- and three-billion dollar mark. Agriculture rises strongly in the early seventies but then falls back to the 10.8 billion dollar mark by 1983. Mining again has two periods of increased activity which prove to be temporary, and closes in 1983 at the 5.3 billion dollar plateau, marginally below its 1971 level.

The GDP index, like the gross output index, is also calculated from a constant price series. The constant price series for GDP, commonly referred to as "real GDP", is derived as the difference between gross output and intermediate inputs in constant prices. This technique is called "double deflation".[9] Figure 27 illustrates what GDP would be for each industry had prices in 1971 (for each specific commodity) remained in effect through to 1985. These values are then compared to the value obtained in 1972 (ie. 1972 = 100). For example, the GDP index value for mining was 110 in 1977. This means that if there had been no changes in prices in the mining industry since 1971 (for either inputs or output), then mining's GDP in 1977 would have been 10 percent more than in 1972. Agriculture averages the highest index value over the 1972-1985 period at 121.4, followed by forestry at 108.3, petroleum at 102.8 and finally mining at 99.4.

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[9] Statistics Canada Catalogue 61-213, p. x.

Figure 28 shows the average annual growth rates for each of the four resource industries and for the GDP of the economy as a whole. The current dollar growth rates are, of course, much larger then the constant dollar rates due to the inflationary bias in the former. Petroleum is far ahead of the other three industries and the growth in GDP for the entire economy. The remaining industries are closely matched, although all three fall short of the growth in GDP for the entire economy.

The mining breakdown is shown in figure 29 and once again metal mining holds the lion's share of activity. The configuration of the graph is almost identical to that of gross output after adjusting for the scale of the numbers involved. In 1980 metal mining accounts for an impressive 74.4 percent of mining's contribution to GDP. The constant 1986 dollar numbers are depicted in figure 30 and show the two periods of expansion for metal mining. Non-metal mining had a similar, if more subdued, expansion in the late seventies, while coal mining showed consistent growth over the entire period. The GDP index in figure 31 contrasts sharply with the nominal dollar series. Metal mining exhibits a falling trend, while coal has increased by a factor of 3.3. Figure 32 illustrates the sub-industry breakdown for mining for the year 1983. Metal mining is divided between gold, iron and other metals.

In the processing stage (figure 33), agriculture dominates with strong growth throughout. Mining and forestry stay roughly in tandem until 1980 when mining forges ahead. Resource processing overall falls from 6.5 of GDP in 1971 to 5.6 percent in 1983. Petroleum processing shows only the slightest upward trend over the twelve year period despite the dramatic rise in the primary stage. The shift to constant dollars flattens the trends but does not alter them significantly. Except for agriculture, no industry shows any rise overall. The GDP index illustrated in figure 35 shows that petroleum's contribution to GDP would have fallen dramatically if the price of oil had stayed at the 1971 level. The averages for the 1972-85 period are as follows: agriculture 109.6, forestry 130.3, minerals 113.5 and finally petroleum at a mere 93.0. Contributions to GDP by resource processing as a percentage of total GDP is shown in figure 36. It has fallen from roughly 6.5 percent in the early seventies to approximately 5.5 percent in the early eighties.

Figure 37 depicts the fabricating stage of activity. Resource fabricating averages around 3.5 percent in its contribution to total GDP; however, it dropped to an historic low of only 2.6 percent (9.2 billion dollars) in 1983. The split between forestry and minerals has remained steady at approximately a 60/40 ratio in favor of forestry. The constant dollar and GDP index numbers are shown in graphs 38 and 39 respectively. Figure 40 shows the sub-industry breakdowns for forestry and minerals at this stage.

In terms of total contribution to GDP (figure 41), minerals came second only to agriculture over the entire period and had their best year in 1980 with an impressive 15.2 billion dollar contribution. Petroleum shows the strongest relative gain from 1971-1983, overtaking both forestry and minerals by 1982. The combined resource sectors contribution to GDP represents a strong 19 percent average over the period, dropping only slightly in the midst of the recession to 17.8 percent in 1982. Changes have, however, taken place within the resource sector. Agriculture has fallen from 39.1 percent of total resources' contribution to GDP in 1971 to 32.3 percent in 1983. Forestry has also fallen slightly from 20.6 percent in 1971 to 18.0 percent in 1983. Minerals fell from 29.5 percent to 19.5 percent, while petroleum has risen from 10.7 percent in 1971 to 30.2 percent in 1983.

The constant dollar series in figure 42 flattens the trend lines considerably, with the exception of petroleum. The cyclical nature of the mineral and forestry industries shows up in this graph, while the more stable nature of agriculture is evident in its less pronounced downturn in the early 1980s. The GDP index (figure 43) turns up a few surprises. Agriculture and forestry average the highest index values, both at 114. Surprisingly, petroleum averages the lowest at 101, while minerals average 105.

The bar graph in figure 44 measures the coefficient of variation (COV)[10] for each of the four industries, at each stage of activity. This statistic gives some indication as to the relative volatility exhibited by each industry. Petroleum proves to be the most volatile according to this measure, not unexpectedly, given the tremendous price changes that have taken place since 1971. Looking at the mineral industry, volatility decreases as activity moves to the processing and fabricating stages. This is not the case for forestry, where processing is the most volatile stage. Agriculture is the most stable industry of the four.

The mineral sector breakdown is shown in figure 45. Here again, primary production dominates processing and fabricating and, in fact, contributes more in terms of GDP than fabricating and processing combined in 1980. Metal mining's rise in the late seventies and decline in the early eighties accounts for the tremendous volatility in primary activity over that time. Constant dollar figures are illustrated in figure 46. Once more the cyclical nature of the primary stage is highlighted. While no strong trend is evident in any stage of activity, note that the severity (amplitude) of the cycles has been increasing over time. This pattern is also evident in the GDP index numbers shown in figure 47. The mineral sector as a percentage of total GDP is shown in figure 48. This percentage has decreased over time, from a high of nearly 6 percent in 1973-74 to a low of 3.5 percent in 1982 and 1983.

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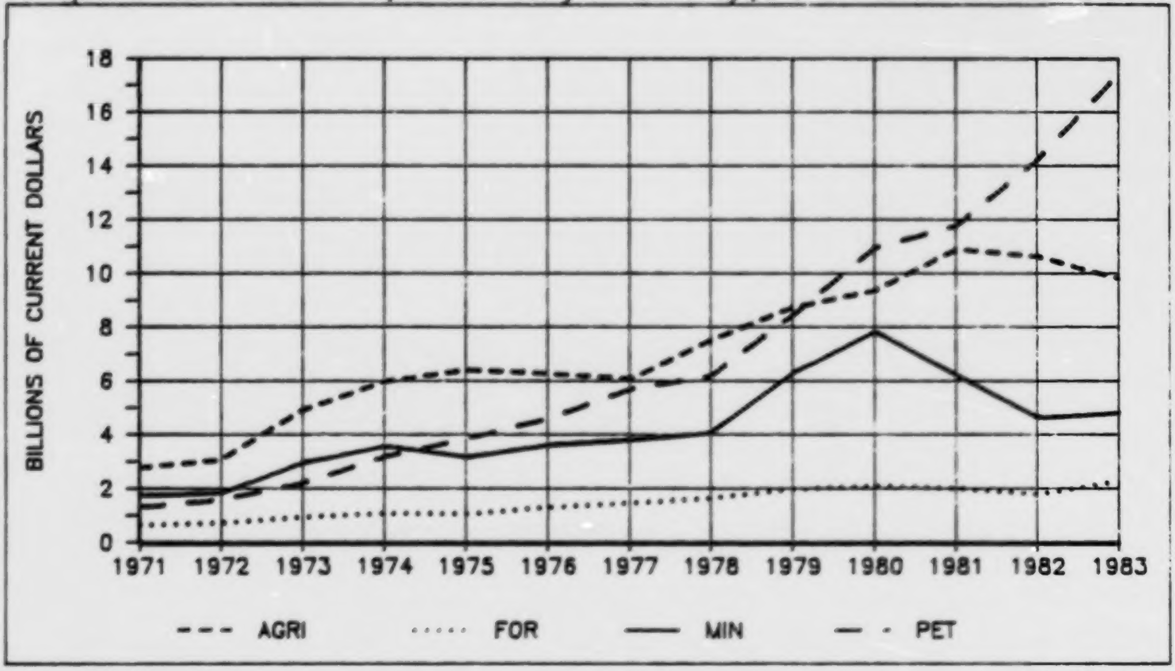
[10] A measure of dispersion similar to that of standard deviation, only adjusted for the scale of numbers involved to allow for comparisons between different series.

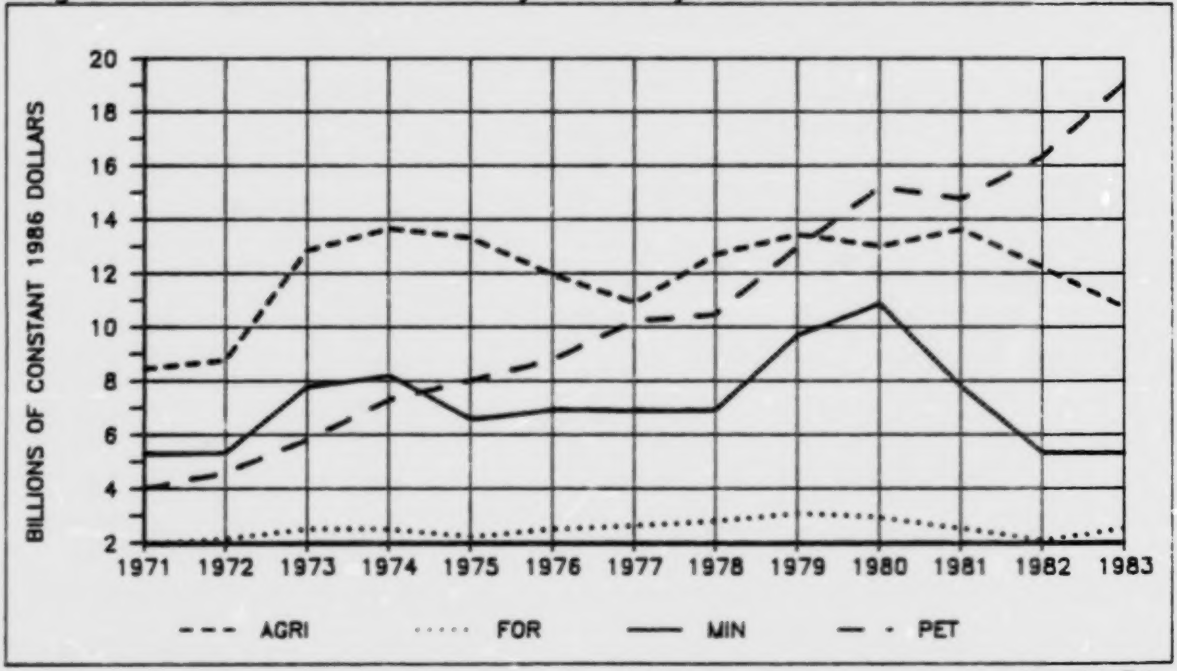
G.D.P.: Primary Activity

Figure 25. G.D.P., Primary Activity, Current Dollars



(ref: table D1)

Figure 26. G.D.P., Primary Activity, Constant 1986 Dollars

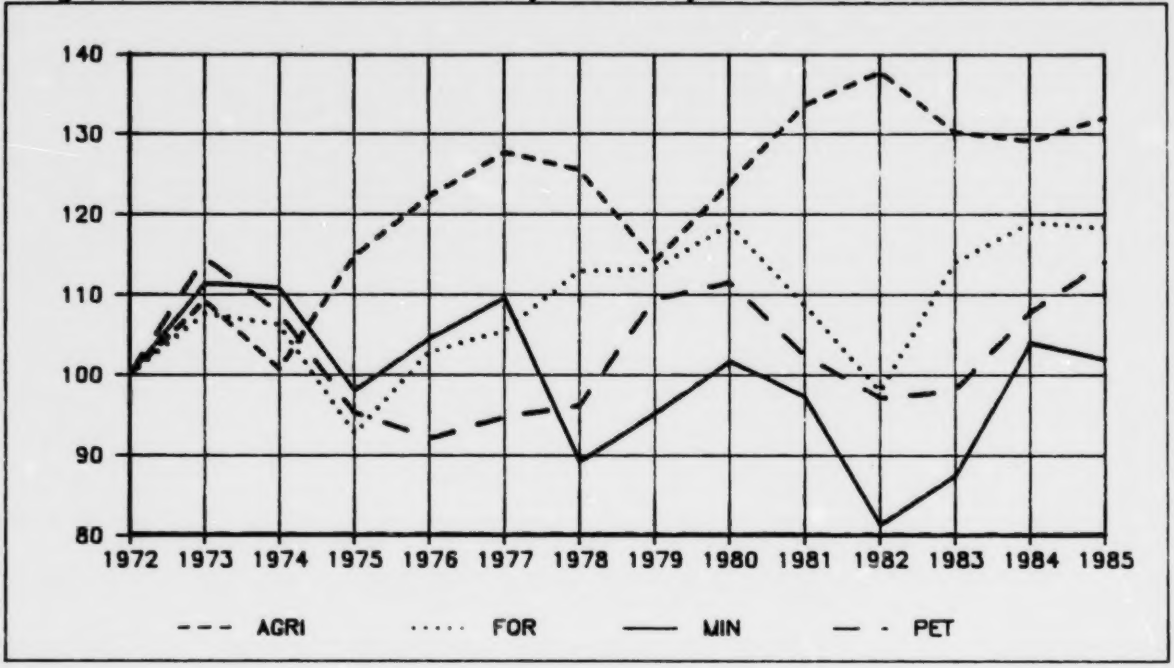


(ref: table E1)

Source: Statistics Canada, Catalogue 61-213.
Constant Dollars Derived Using G.D.P. Deflator

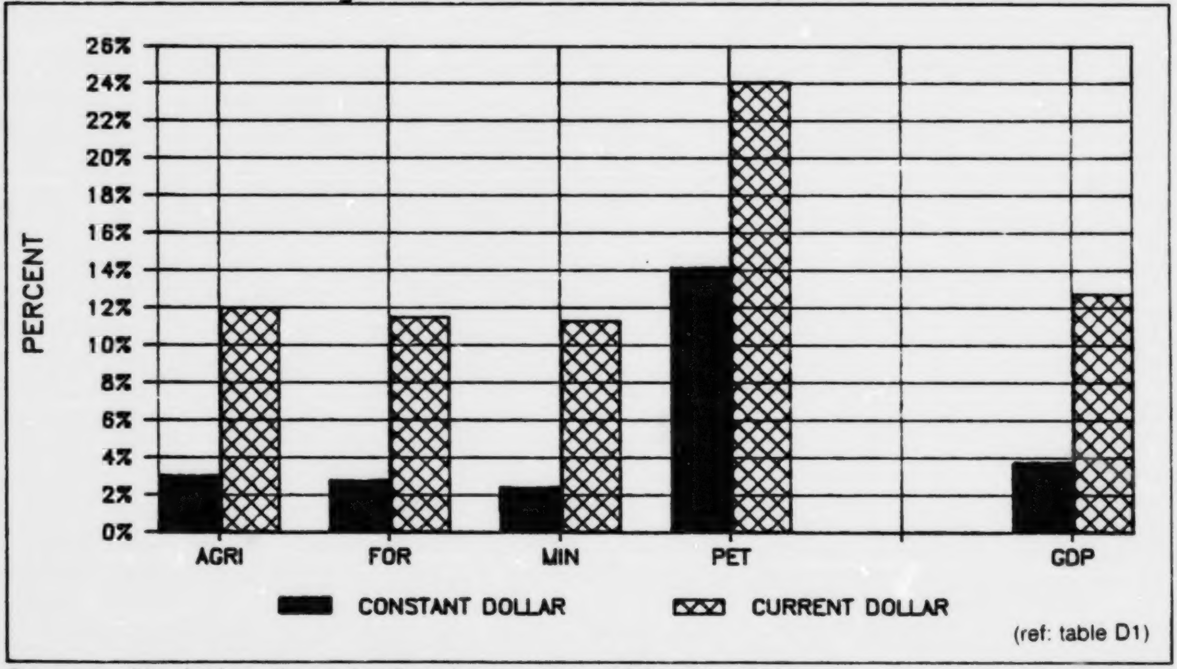
G.D.P.: Primary Activity

Figure 27. G.D.P., Primary Activity, G.D.P. Index



(ref: table F1)

Figure 28. G.D.P., Primary Activity
Average Anuual Growth Rate, 1971–1983

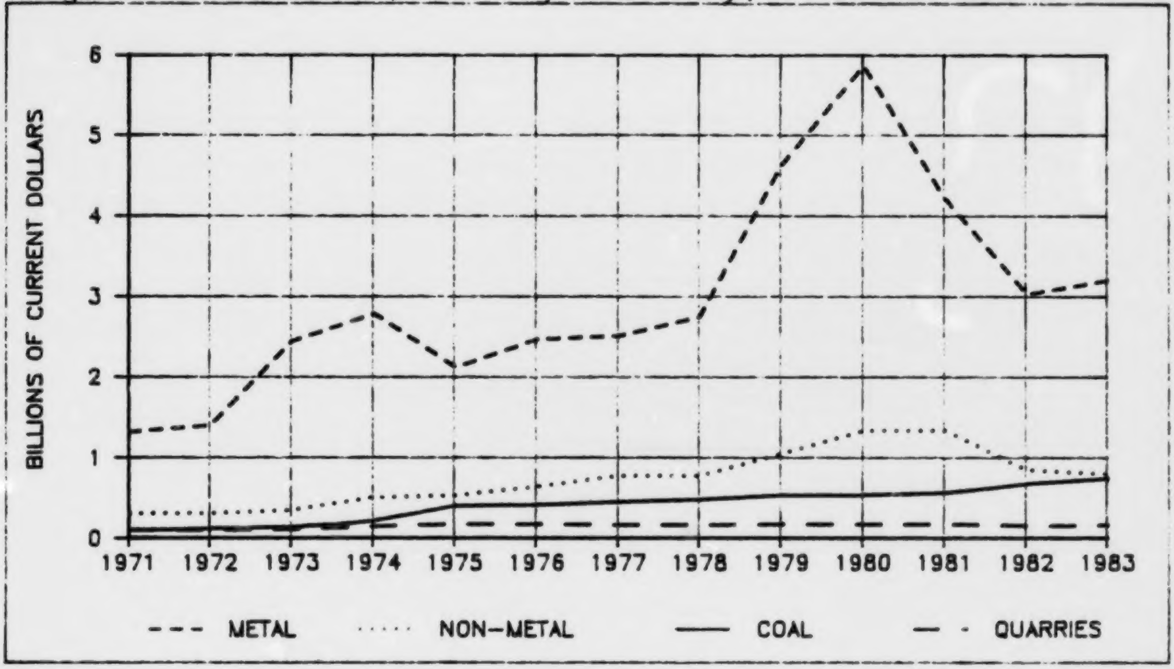


(ref: table D1)

Source: Statistics Canada Catalogue 61–005, 61–213. (ref: table E1)
Figure 28: Growth Rate is Defined as the Percent Change From Previous Year.
Constant Dollar Series Derived Using G.N.E. Deflator.

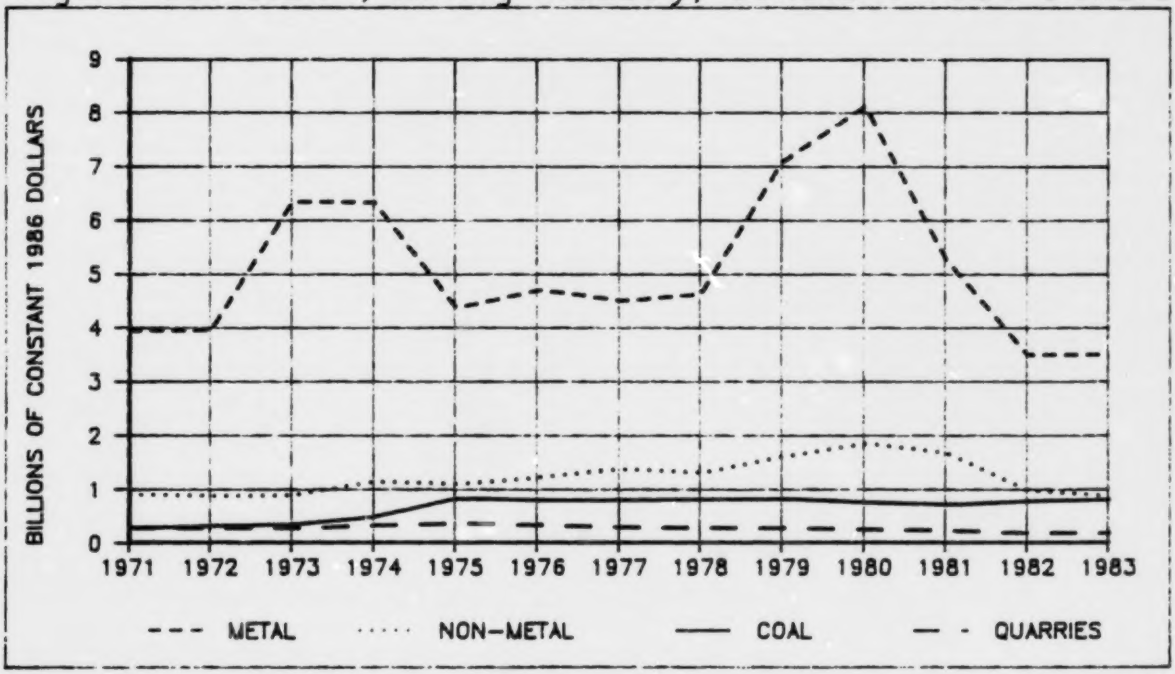
G.D.P.: Mining Industry

Figure 29. G.D.P., Mining Industry, Current Dollars



(ref: table D2)

Figure 30. G.D.P., Mining Industry, Constant 1986 Dollars

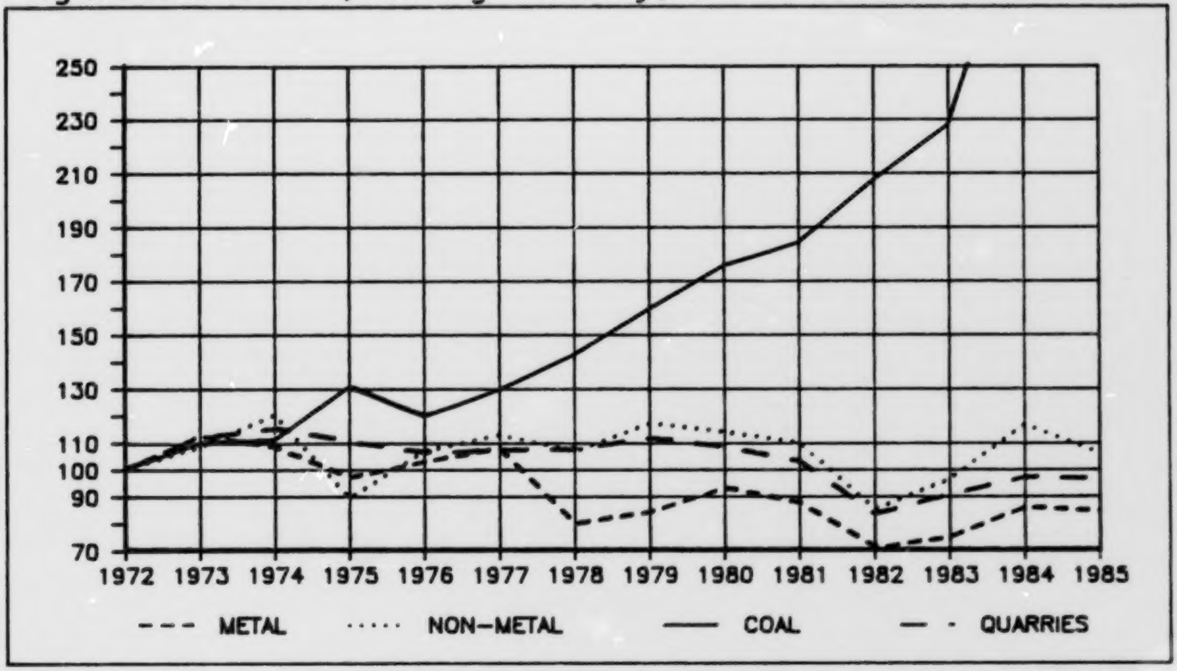


(ref: table E2)

Source: Statistics Canada, Catalogue 61–213.
Constant Dollars Derived Using G.D.P. Deflator

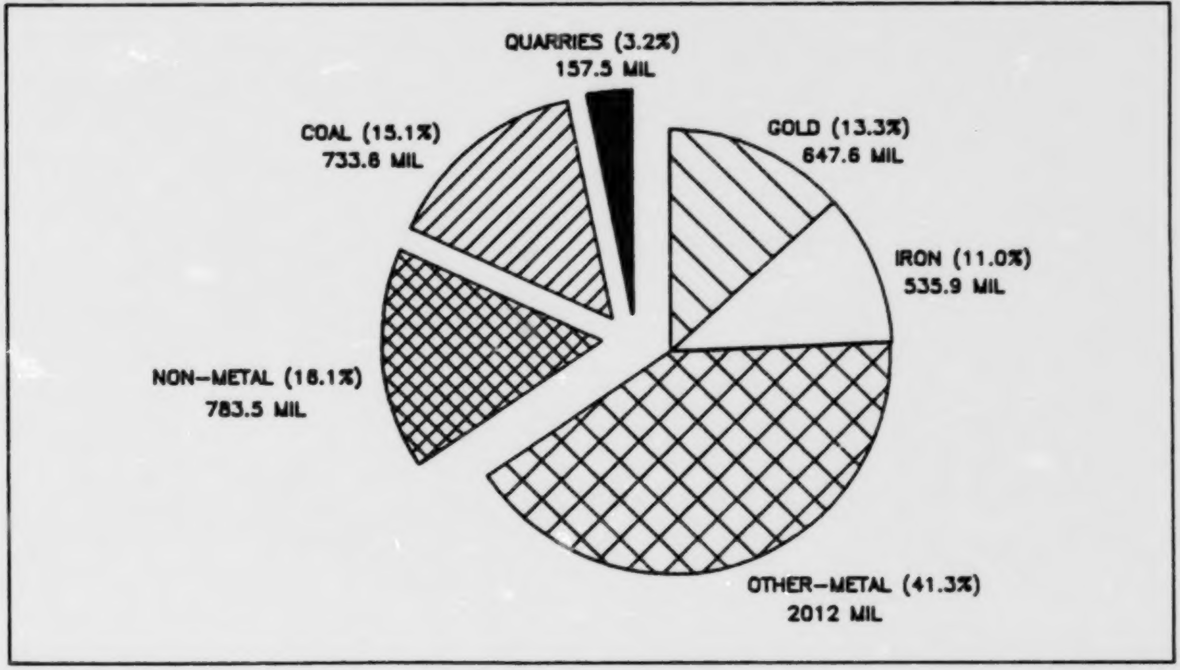
G.D.P.: Mining Industry

Figure 31. G.D.P., Mining Industry, G.D.P. Index



(ref: table F2)

Figure 32. G.D.P., Mining Industry, Sub-Industry Breakdown: 1983

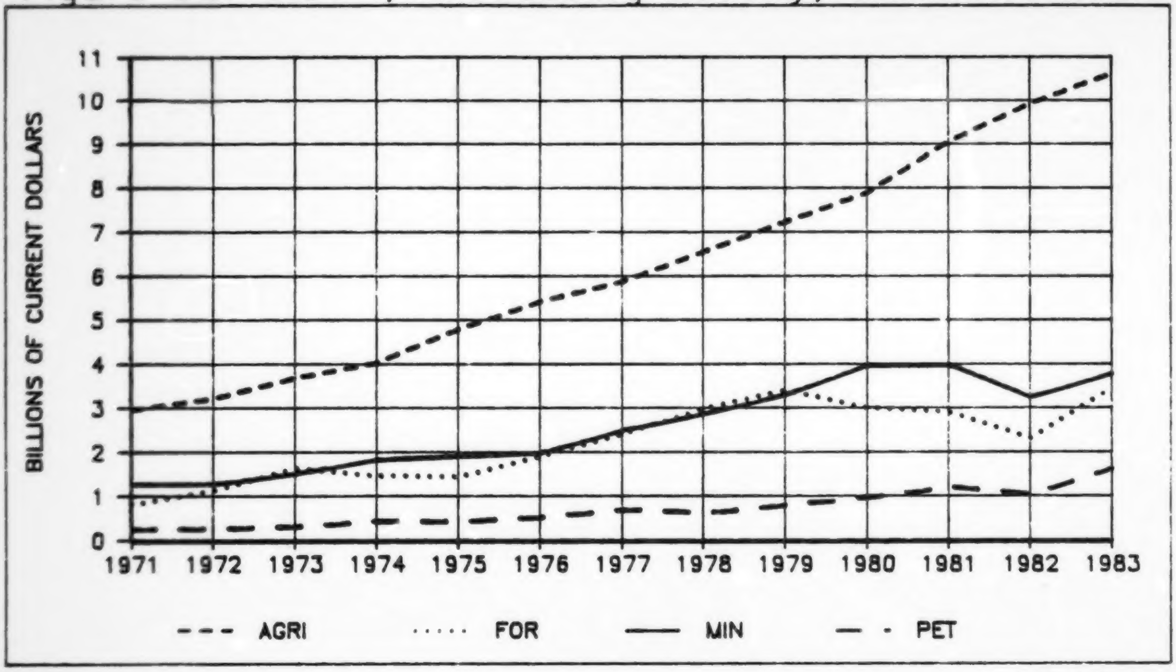


(ref: table D2)

Source: Statistics Canada, Catalogue 61-005, 61-213.
Figure 32 Based on Current Dollar Series.

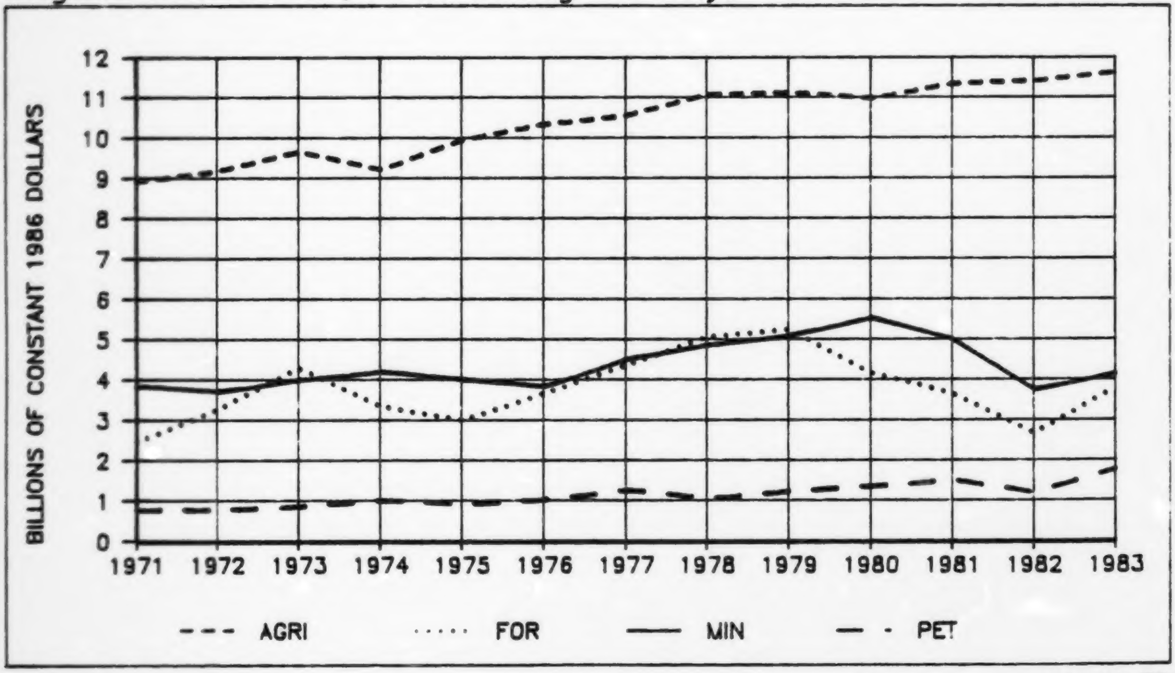
G.D.P.: Processing Activity

Figure 33. G.D.P., Processing Activity, Current Dollars



(ref: table D3)

Figure 34. G.D.P., Processing Activity, Constant 1986 Dollars

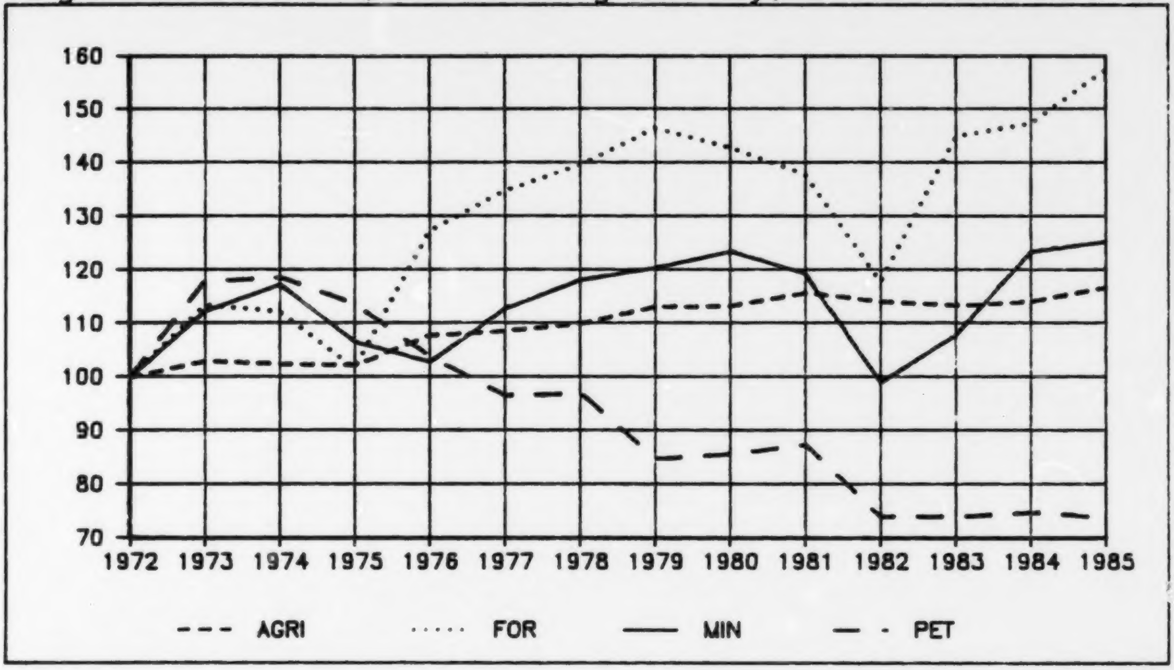


(ref: table E3)

Source: Statistics Canada, Catalogue 61–213.
Constant Dollars Derived Using G.D.P. Deflator

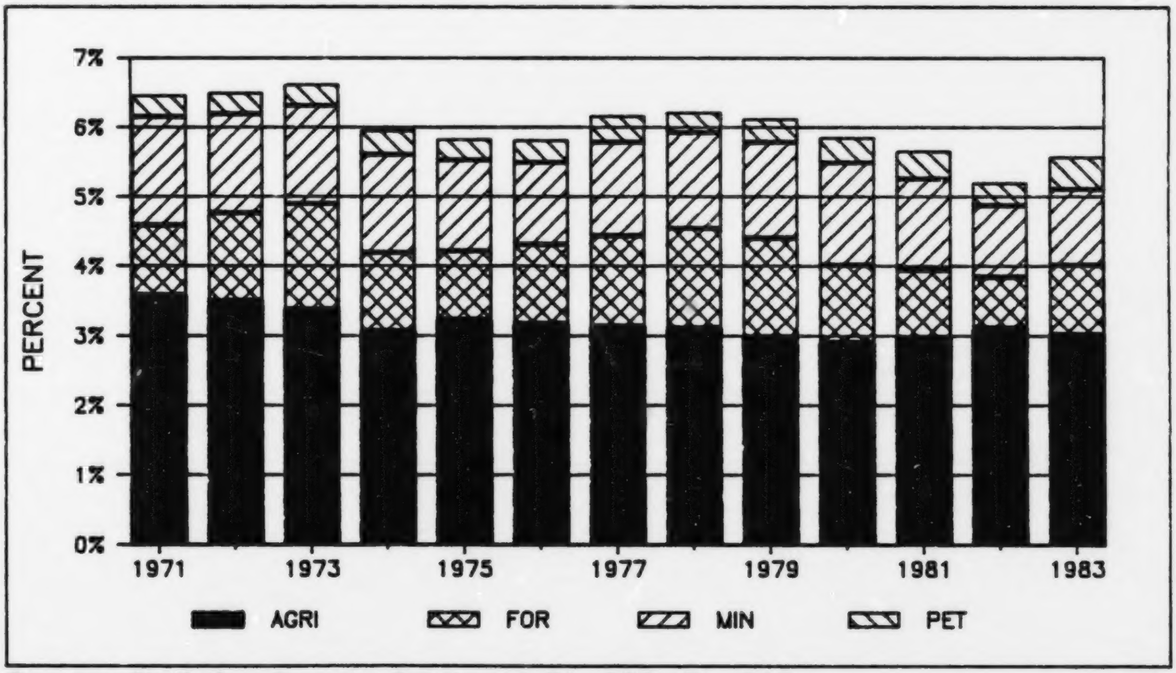
G.D.P.: Processing Activity

Figure 35. G.D.P., Processing Activity, G.D.P. Index



(ref: table F3)

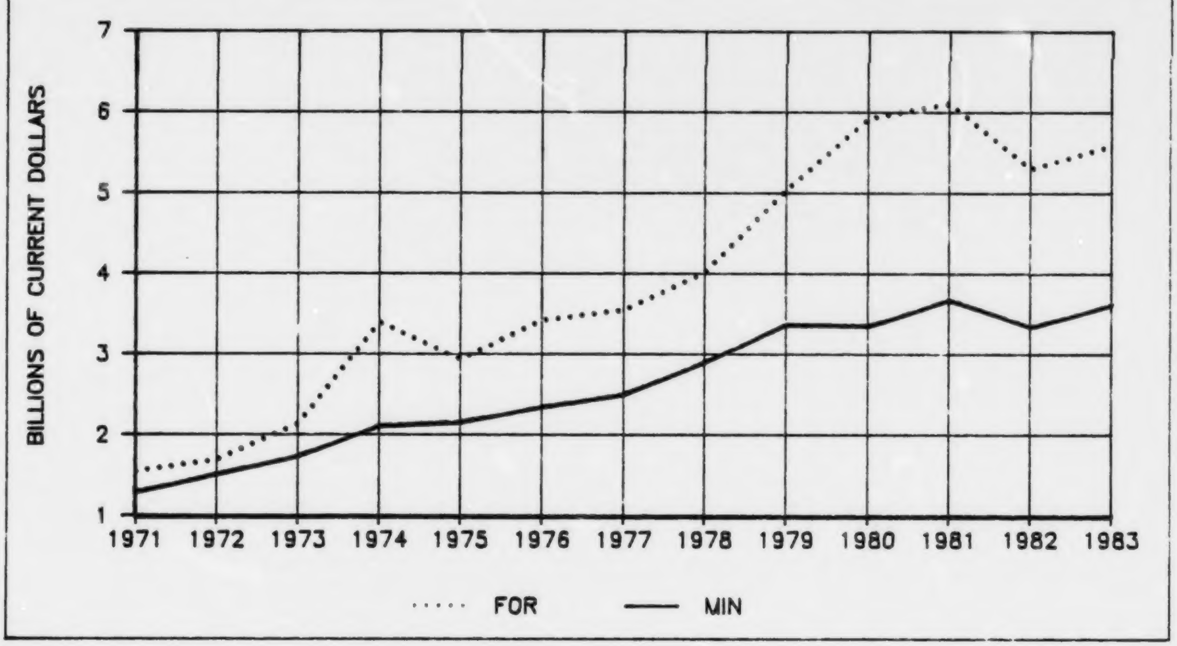
Figure 36. G.D.P., Processing Activity, Percent of Total G.D.P.



Source: Statistics Canada Catalogue 61–005, 61–213. (ref: table D3)
Figure 36 is Derived From Current Dollar Series.
Constant Dollar Series Derived Using G.N.E. Deflator.

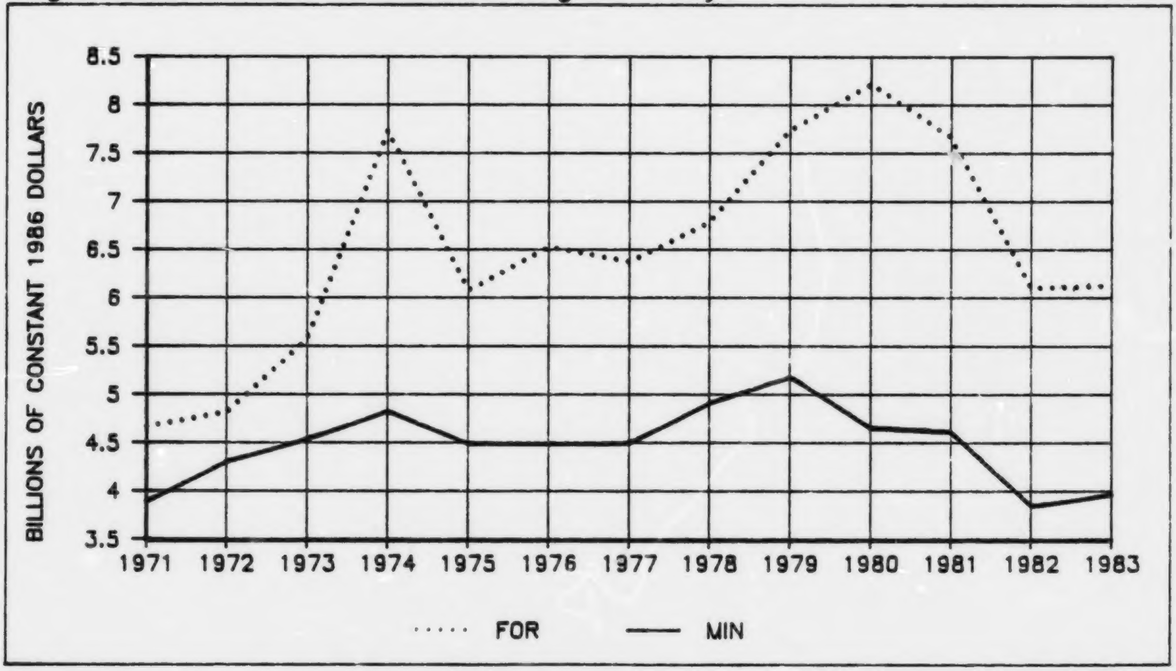
G.D.P.: Fabricating Activity

Figure 37. G.D.P., Fabricating Activity, Current Dollars



(ref: table D4)

Figure 38. G.D.P., Fabricating Activity, Constant 1986 Dollars

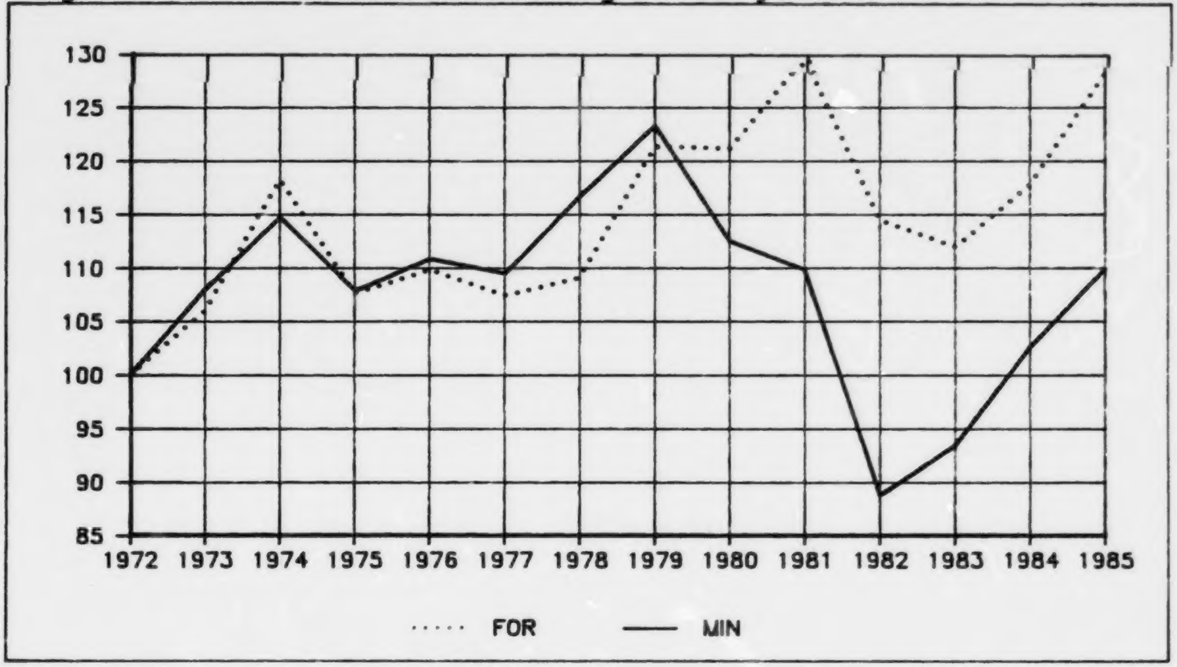


(ref: table E4)

Source: Statistics Canada, Catalogue 61-213.
Constant Dollars Derived Using G.D.P. Deflator

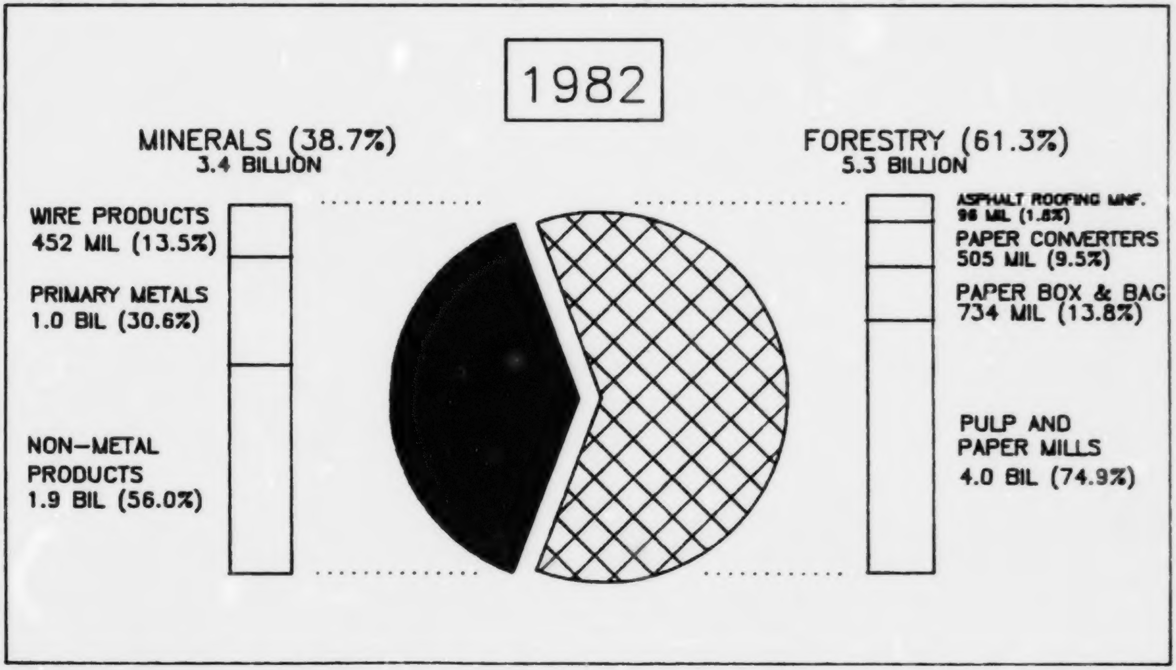
G.D.P.: Fabricating Activity

Figure 39. G.D.P., Fabricating Activity, G.D.P. Index



(ref: table F4)

Figure 40. G.D.P., Fabricating Activity, Sub–Industry Breakdown

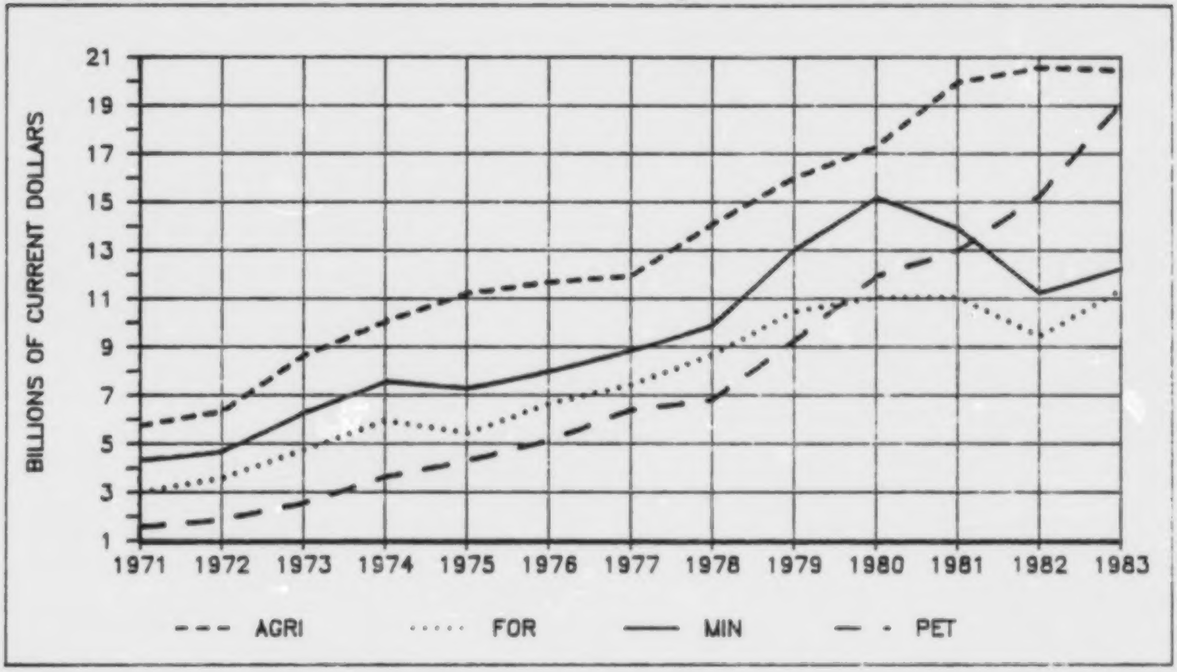


(ref: table D4)

Source: Statistics Canada Catalogue 61–005, 61–213.
Figure 40 Derived From Current Dollar Series.

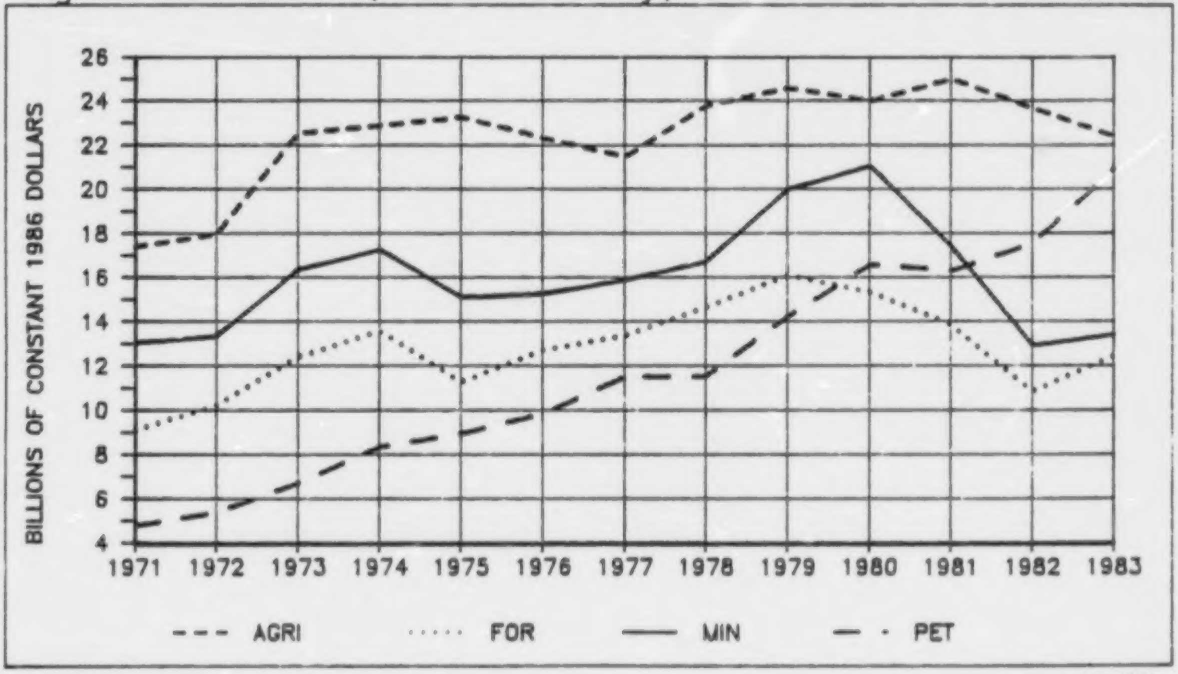
G.D.P.: Total Activity

Figure 41. G.D.P., Total Activity, Current Dollars



(ref: table D5)

Figure 42. G.D.P., Total Activity, Constant 1986 Dollars

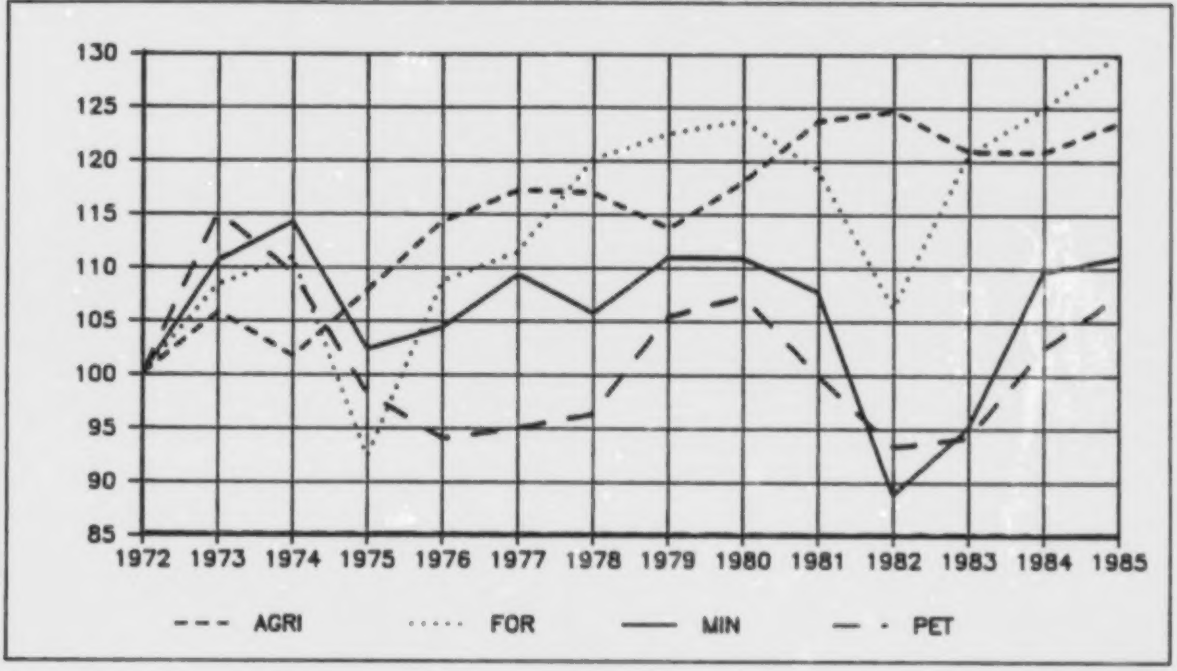


(ref: table E5)

Source: Statistics Canada, Catalogue 61–213.
Constant Dollars Derived Using G.D.P. Deflator

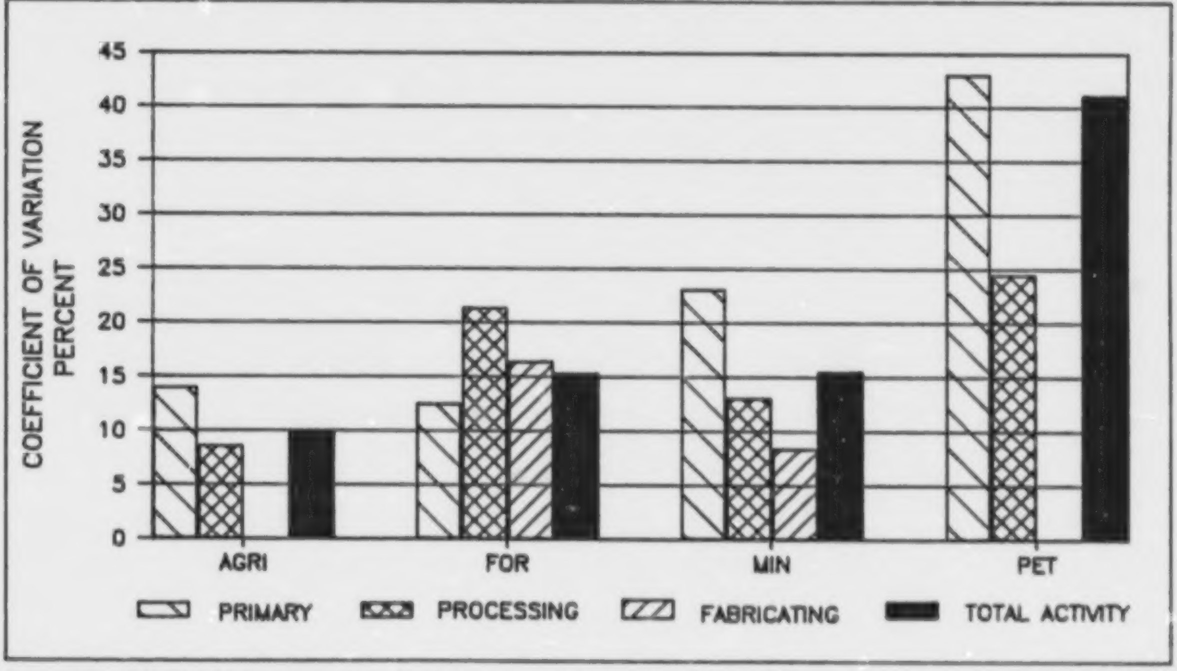
G.D.P.: Total Activity

Figure 43. G.D.P., Total Activity, G.D.P. Index



(ref: table F5)

Figure 44. G.D.P., Total Activity, Coefficient of Variation

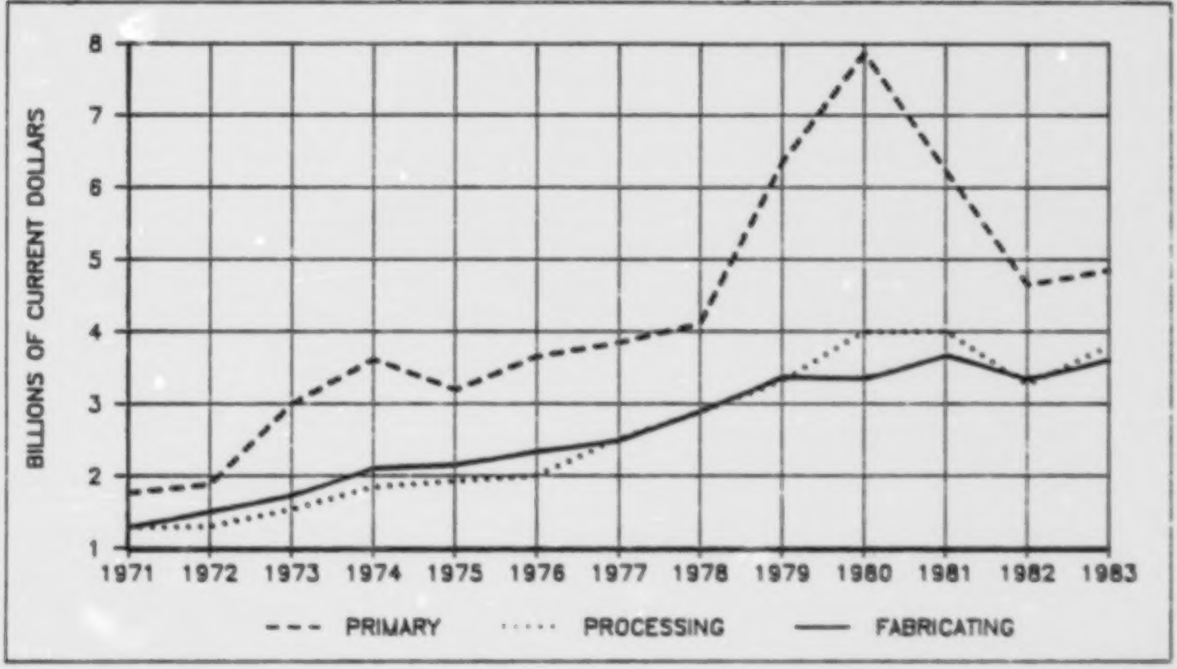


Source: Statistics Canada, Catalogue 61-005, 61-213.
Figure 44 Based on Constant (1986) Dollar Series.
Constant Dollars Derived Using G.N.E. Deflator

(ref: table E5)

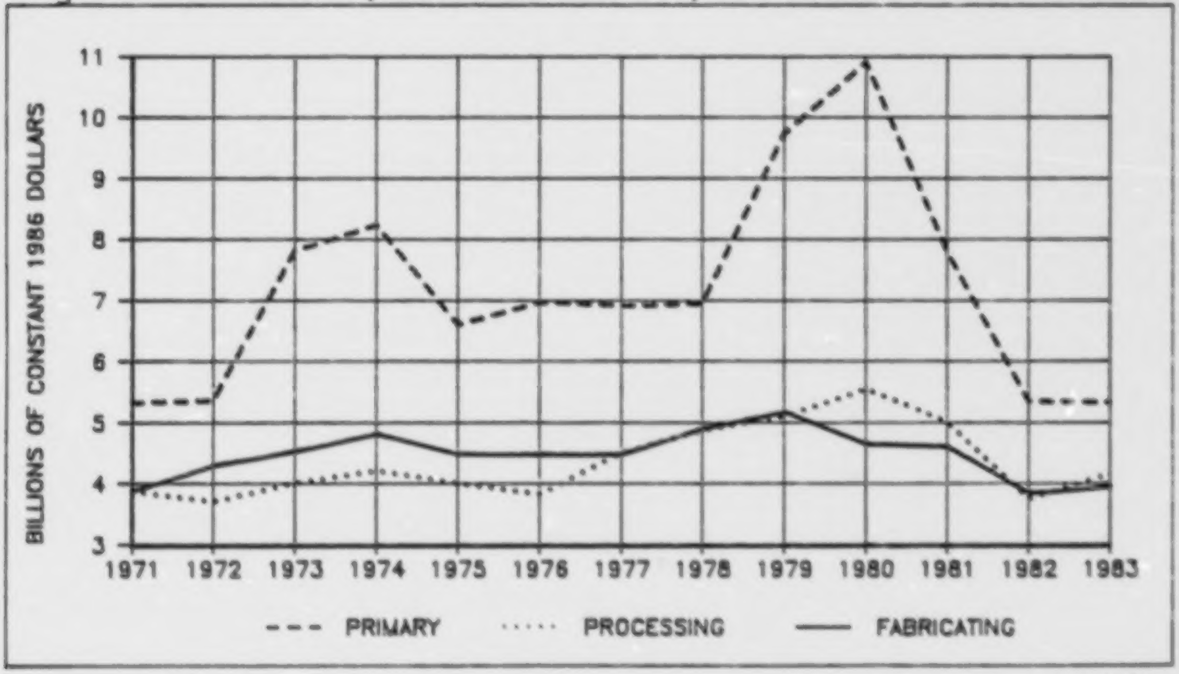
G.D.P.: Mineral Sector

Figure 45. G.D.P., Mineral Sector, Current Dollars



(ref: table D6)

Figure 46. G.D.P., Mineral Sector, Constant 1986 Dollars

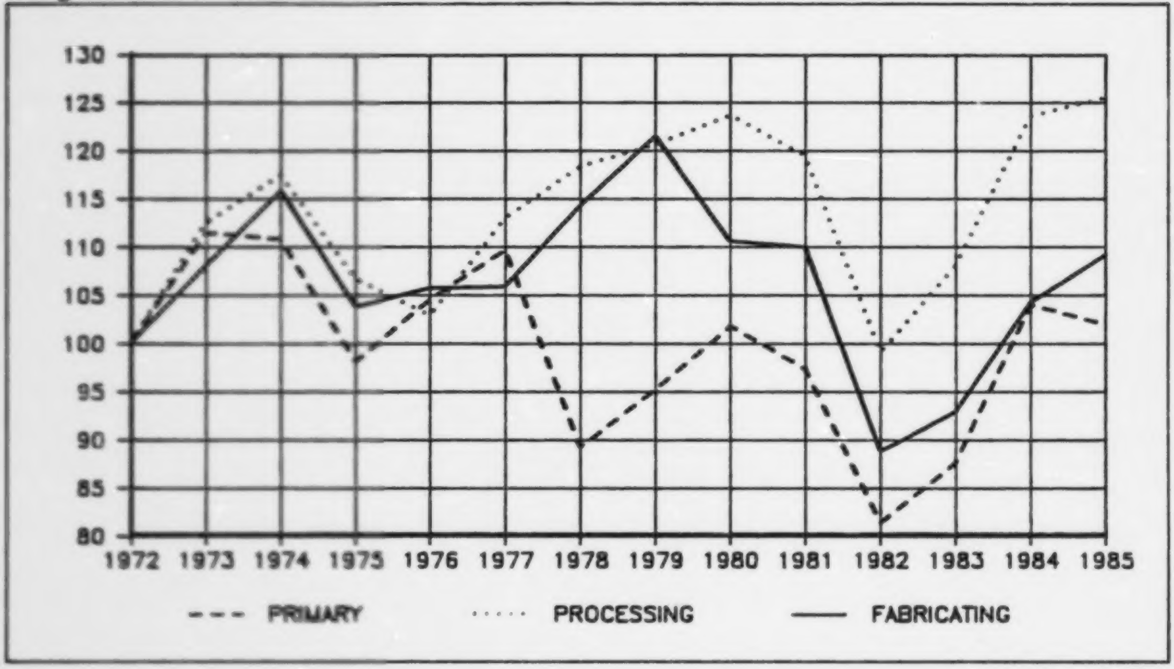


(ref: table E6)

Source: Statistics Canada, Catalogue 61–213.
Constant Dollars Derived Using G.D.P. Deflator

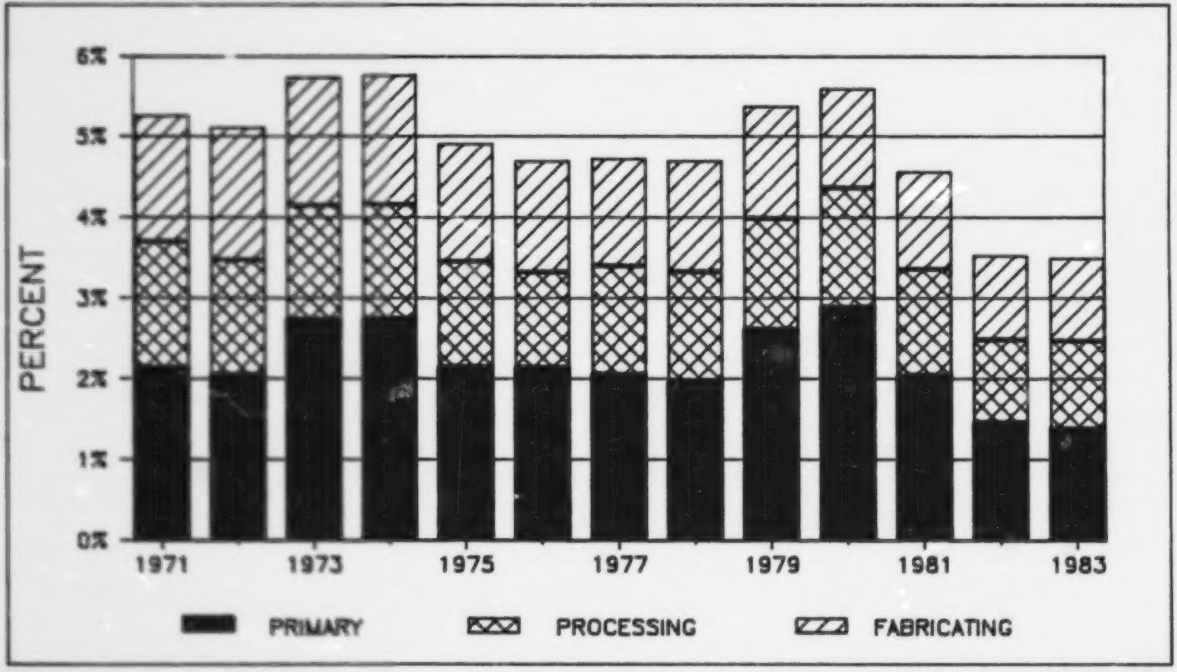
G.D.P.: Mineral Sector

Figure 47. G.D.P., Mineral Sector, G.D.P. Index



(ref: table F6)

Figure 48. G.D.P., Mineral Sector, Percent of Total G.D.P.



(ref: table D6)

Source: Statistics Canada, Catalogue 61–005, 61–213.
Figure 48 Based on Current Dollar Series.

Table D

TABLE 1: PRIMARY ACTIVITY (MILLIONS OF CURRENT DOLLARS)

GROSS DOMESTIC PRODUCT	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983
AGRICULTURE	2843	3120	4965	6033	6455	6296	6106	7554	8788	9406	10927	10644	9828
FORESTRY	670	768	980	1112	1081	1340	1494	1681	2027	2133	2037	1824	2321
MINERALS	1789	1906	3017	3634	3205	3673	3867	4131	6355	7875	6248	4665	4870
PETROLEUM	1357	1643	2260	3234	3906	4645	5737	6239	8485	10990	11818	14256	17473
TOTAL GDP (CANADA)	83261	92692	109922	132000	148770	171035	187819	210838	242550	271923	304618	319057	351039

TABLE 2: MINING INDUSTRY (MILLIONS OF CURRENT DOLLARS)

GROSS DOMESTIC PRODUCT	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983
METAL MINES	1317	1397	2439	2779	2111	2462	2505	2737	4619	5856	4199	3020	3196
NON-METAL MINES	298	305	340	498	523	636	765	765	1040	1327	1324	834	784
COAL	89	113	135	214	398	409	444	476	529	527	559	674	734
QUARRIES	85	91	103	143	173	166	153	153	167	165	166	137	157
TOTAL GDP (CANADA)	83261	92692	109922	132000	148770	171035	187819	210838	242550	271923	304618	319057	351039

TABLE 3: PROCESSING (MILLIONS OF CURRENT DOLLARS)

GROSS DOMESTIC PRODUCT	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983
AGRICULTURE	2994	3258	3728	4065	4829	5449	5906	6580	7264	7929	9088	9963	10642
FORESTRY	831	1162	1664	1481	1457	1936	2441	3010	3436	3020	2935	2333	3491
MINERALS	1300	1318	1553	1864	1946	2021	2529	2898	3337	4011	4016	3276	3820
PETROLEUM	263	288	343	461	454	558	722	634	827	999	1231	1062	1655
TOTAL GDP (CANADA)	83261	92692	109922	132000	148770	171035	187819	210838	242550	271923	304618	319057	351039

TABLE 4: FABRICATING (MILLIONS OF CURRENT DOLLARS)

GROSS DOMESTIC PRODUCT	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983
FORESTRY	1566	1708	2149	3407	2946	3436	3562	4027	5051	5935	6125	5316	5606
MINERALS	1305	1528	1753	2129	2178	2361	2516	2917	3386	3362	3690	3354	3632
TOTAL GDP (CANADA)	83261	92692	109922	132000	148770	171035	187819	210838	242550	271923	304618	319057	351039

TABLE 5: TOTAL ACTIVITY (MILLIONS OF CURRENT DOLLARS)

GROSS DOMESTIC PRODUCT	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983
AGRICULTURE	5837	6378	8693	10098	11284	11745	12012	14134	16052	17335	20015	20607	20470
FORESTRY	3067	3638	4793	6000	5484	6712	7497	8718	10514	11088	11097	9473	11419
MINERALS	4394	4752	6323	7627	7329	8055	8912	9946	13078	15248	13954	11295	12322
PETROLEUM	1620	1931	2603	3695	4360	5203	6459	6873	9312	11989	13049	15318	19128
TOTAL GDP (CANADA)	83261	92692	109922	132000	148770	171035	187819	210838	242550	271923	304618	319057	351039

TABLE 6: MINERAL SECTOR (MILLIONS OF CURRENT DOLLARS)

GROSS DOMESTIC PRODUCT	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983
MINING	1789	1906	3017	3634	3205	3673	3867	4131	6355	7875	6248	4665	4870
PROCESSING	1300	1318	1553	1864	1946	2021	2529	2898	3337	4011	4016	3276	3820
FABRICATING	1305	1528	1753	2129	2178	2361	2516	2917	3386	3362	3690	3354	3632
TOTAL GDP (CANADA)	83261	92692	109922	132000	148770	171035	187819	210838	242550	271923	304618	319057	351039

Table E

TABLE 1: PRIMARY ACTIVITY GROSS DOMESTIC PRODUCT	1971	1972	1973	1974	1975	1976	1977	1978
				(MILLIONS OF CONSTANT 1986 DOLLARS)				
AGRICULTURE	8497.3	8820.0	12900.1	13712.0	13339.6	11982.8	10939.6	12749.5
FORESTRY	2002.5	2171.1	2546.2	2527.4	2233.9	2550.3	2676.7	2837.2
MINERALS	5347.1	5388.1	7838.8	8259.5	6623.3	6990.6	6928.1	6972.2
PETROLEUM	4055.9	4644.7	5871.9	7350.4	8072.0	8840.6	10278.4	10530.1
TOTAL GDP (CANADA)	248855.7	262034.5	285599.6	300014.5	307441.6	325521.0	336497.8	355848.3

TABLE 2: MINING INDUSTRY GROSS DOMESTIC PRODUCT	1971	1972	1973	1974	1975	1976	1977	1978
				(MILLIONS OF CONSTANT 1986 DOLLARS)				
METAL MINES	3936.3	3949.2	6337.0	6316.2	4362.5	4685.8	4488.0	4619.5
NON-METAL MINES	890.7	862.2	883.4	1131.9	1080.8	1210.5	1370.6	1291.2
COAL	266.0	319.4	350.8	486.4	822.5	778.4	795.5	803.4
QUARRIES	254.1	257.3	267.6	325.0	357.5	315.9	274.1	258.2
TOTAL GDP (CANADA)	248855.7	262034.5	285599.6	300014.5	307441.6	325521.0	336497.8	355848.3

TABLE 3: PROCESSING GROSS DOMESTIC PRODUCT	1971	1972	1973	1974	1975	1976	1977	1978
				(MILLIONS OF CONSTANT 1986 DOLLARS)				
AGRICULTURE	8949.3	9209.3	9685.1	9238.9	9979.8	10370.6	10581.4	11104.8
FORESTRY	2483.7	3284.9	4323.4	3366.1	3011.0	3684.7	4373.3	5080.2
MINERALS	3885.5	3725.9	4035.0	4236.6	4021.5	3846.5	4531.0	4891.2
PETROLEUM	786.1	814.2	891.2	1047.8	936.2	1062.0	1293.5	1070.1
TOTAL GDP (CANADA)	248855.7	262034.5	285599.6	300014.5	307441.6	325521.0	336497.8	355848.3

TABLE 4: FABRICATING GROSS DOMESTIC PRODUCT	1971	1972	1973	1974	1975	1976	1977	1978
				(MILLIONS OF CONSTANT 1986 DOLLARS)				
FORESTRY	4680.6	4828.4	5583.5	7743.6	6088.1	6539.5	6381.7	6796.7
MINERALS	3900.5	4319.6	4554.6	4838.9	4501.0	4493.6	4507.7	4923.3
TOTAL GDP (CANADA)	248855.7	262034.5	285599.6	300014.5	307441.6	325521.0	336497.8	355848.3

TABLE 5: TOTAL ACTIVITY GROSS DOMESTIC PRODUCT	1971	1972	1973	1974	1975	1976	1977	1978
				(MILLIONS OF CONSTANT 1986 DOLLARS)				
AGRICULTURE	17446.6	18029.4	22585.1	22950.9	23319.4	22353.4	21521.0	23854.2
FORESTRY	9166.8	10284.4	12453.2	13637.0	11333.0	12774.6	13431.7	14714.1
MINERALS	13133.1	13433.6	16428.4	17334.9	15145.8	15330.6	15966.8	16786.7
PETROLEUM	4842.0	5458.8	6763.1	8398.1	9010.2	9902.6	11572.0	11600.1
TOTAL GDP (CANADA)	248855.7	262034.5	285599.6	300014.5	307441.6	325521.0	336497.8	355848.3

TABLE 6: MINERAL SECTOR GROSS DOMESTIC PRODUCT	1971	1972	1973	1974	1975	1976	1977	1978
				(MILLIONS OF CONSTANT 1986 DOLLARS)				
MINING	5347.1	5388.1	7838.8	8259.5	6623.3	6990.6	6928.1	6972.2
PROCESSING	3885.5	3725.9	4035.0	4236.6	4021.5	3846.5	4531.0	4891.2
FABRICATING	3900.5	4319.6	4554.6	4838.9	4501.0	4493.6	4507.7	4923.3
TOTAL GDP (CANADA)	248855.7	262034.5	285599.6	300014.5	307441.6	325521.0	336497.8	355848.3

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     1979      1980      1981      1982      1983       AVG    C.O.V.

  13487.1   13044.8   13684.2   12240.4   10768.1   12012.7      14.1
   3110.9    2958.2    2551.0    2097.6    2543.5    2523.6      12.6
   9753.2   10921.5    7824.6    5364.7    5336.2    7196.0      23.2
  13022.1   15241.6   14800.1   16394.2   19144.2   10634.3      43.0
  -------   -------   -------   -------   -------   -------   -------
 372246.9  377118.8  381483.3  366910.7  384618.0  331091.6      13.6
-------------------------------------------------------------------------

     1979      1980      1981      1982      1983       AVG    C.O.V.

   7088.9    8121.4    5258.5    3473.0    3501.4    5087.5      27.4
   1596.1    1840.4    1658.1     959.1     858.4    1202.6      26.5
    811.9     730.9     700.1     775.1     803.8     649.5      31.3
    256.3     228.8     207.9     157.5     172.6     256.4      21.3
   ------    ------    ------    ------    ------   -------   -------
 372246.9  377118.8  381483.3  366910.7  384618.0  331091.6      13.6
-------------------------------------------------------------------------

     1979      1980      1981      1982      1983       AVG    C.O.V.

  11148.8   10995.7   11381.3   11456.8   11660.0   10443.2       8.7
   5273.3    4188.3    3675.6    2682.9    3824.7    3788.6      21.5
   5121.4    5562.7    5029.4    3767.3    4185.8    4372.3      13.1
   1269.2    1385.5    1541.6    1221.3    1813.3    1164.1      24.6
   ------    ------    ------    ------    ------   -------   -------
 372246.9  377118.8  381483.3  366910.7  384618.0  331091.6      13.6
-------------------------------------------------------------------------

     1979      1980      1981      1982      1983       AVG    C.O.V.

   7751.9    8231.0    7670.5    6113.3    6142.6    6504.0      16.5
   5196.6    4662.6    4621.1    3857.0    3979.0    4488.9       8.5
   ------    ------    ------    ------    ------    ------    ------
 372246.9  377118.8  381483.3  366910.7  384618.0  331091.6      13.6
-------------------------------------------------------------------------

     1979      1980      1981      1982      1983       AVG    C.O.V.

  24636.0   24040.5   25065.6   23697.3   22428.1   22456.0       9.9
  16136.1   15377.5   13897.1   10893.8   12510.7   12816.2      15.2
  20071.1   21146.8   17475.1   12989.1   13501.0   16057.1      15.4
  14291.3   16627.0   16341.7   17615.5   20957.5   11798.5      41.0
  -------   -------   -------   -------   -------   -------   -------
 372246.9  377118.8  381483.3  366910.7  384618.0  331091.6      13.6
-------------------------------------------------------------------------

     1979      1980      1981      1982      1983       AVG    C.O.V.

   9753.2   10921.5    7824.6    5364.7    5336.2    7196.0      23.2
   5121.4    5562.7    5029.4    3767.3    4185.8    4372.3      13.1
   5196.6    4662.6    4621.1    3857.0    3979.0    4488.9       8.5
   ------   -------   -------   -------   -------   -------   -------
 372246.9  377118.8  381483.3  366910.7  384618.0  331091.6      13.6
-------------------------------------------------------------------------
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Table F

TABLE 1: PRIMARY ACTIVITY CONSTANT (1971) PRICES

GDP INDEX, 1972 = 100	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981
AGRICULTURE	100.0	109.1	100.6	114.7	122.2	127.6	125.4	114.0	123.7	133.5
FORESTRY	100.0	107.5	106.1	92.6	102.8	105.4	112.8	113.0	118.6	108.6
MINERALS	100.0	111.3	110.6	97.9	104.4	109.5	89.1	95.1	101.6	97.1
PETROLEUM	100.0	114.4	107.6	95.1	92.0	94.7	96.1	109.3	111.4	102.2
TOTAL (CANADA)	100.0	107.8	112.7	113.8	119.6	122.9	126.9	131.9	133.6	137.3

TABLE 2: MINING INDUSTRY CONSTANT (1971) PRICES

GDP INDEX, 1972 = 100	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981
METAL MINES	100.0	112.2	108.0	96.7	102.7	107.5	79.6	83.9	92.7	87.2
NON-METAL MINES	100.0	108.1	120.0	89.1	106.5	112.4	106.3	116.9	113.5	109.7
COAL	100.0	109.7	110.8	130.5	119.3	129.4	142.4	159.2	175.3	183.8
QUARRIES	100.0	111.7	115.0	109.9	105.9	107.1	107.3	111.3	107.8	102.5
TOTAL (CANADA)	100.0	107.8	112.7	113.8	119.6	122.9	126.9	131.9	133.6	137.3

TABLE 3: PROCESSING CONSTANT (1971) PRICES

GDP INDEX, 1972 = 100	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981
AGRICULTURE	100.0	103.0	102.4	102.2	107.9	108.7	110.0	113.2	113.3	115.8
FORESTRY	100.0	113.5	112.2	101.6	127.4	134.9	139.6	146.5	142.8	137.8
MINERALS	100.0	112.4	117.3	106.5	102.7	112.9	118.2	120.5	123.5	119.3
PETROLEUM	100.0	118.0	118.7	113.6	103.8	96.5	97.1	84.8	85.7	87.4
TOTAL (CANADA)	100.0	107.8	112.7	113.8	119.6	122.9	126.9	131.9	133.6	137.3

TABLE 4: FABRICATING CONSTANT (1971) PRICES

GDP INDEX, 1972 = 100	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981
FORESTRY	100.0	106.0	118.2	107.6	109.7	107.3	109.1	121.3	121.1	129.6
MINERALS	100.0	108.0	114.7	107.8	110.8	109.4	116.6	123.3	112.4	109.7
TOTAL (CANADA)	100.0	107.8	112.7	113.8	119.6	122.9	126.9	131.9	133.6	137.3

TABLE 5: TOTAL ACTIVITY CONSTANT (1971) PRICES

GDP INDEX, 1972 = 100	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981
AGRICULTURE	100.0	105.7	101.6	107.8	114.2	117.1	116.8	113.6	118.0	123.7
FORESTRY	100.0	108.3	110.9	92.3	108.6	111.4	120.1	122.4	123.7	119.0
MINERALS	100.0	110.5	114.2	102.3	104.3	109.3	105.6	110.9	110.8	107.6
PETROLEUM	100.0	115.0	109.4	98.1	93.9	95.0	96.3	105.3	107.3	99.8
TOTAL (CANADA)	100.0	107.8	112.7	113.8	119.6	122.9	126.9	131.9	133.6	137.3

TABLE 6: MINERAL SECTOR CONSTANT (1971) PRICES

GDP INDEX, 1972 = 100	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981
MINING	100.0	111.3	110.6	97.9	104.4	109.5	89.1	95.1	101.6	97.1
PROCESSING	100.0	112.4	117.3	106.5	102.7	112.9	118.2	120.5	123.5	119.3
FABRICATING	100.0	108.0	115.7	103.6	105.6	105.8	114.2	121.4	110.4	109.8
TOTAL (CANADA)	100.0	107.8	112.7	113.8	119.6	122.9	126.9	131.9	133.6	137.3

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*****************************************

 1982   1983    1984   1985   AVG.  C.O.V.

 137.6  130.0  128.9  132.0  121.4    9.5
  97.8  113.9  118.8  118.0  108.3    7.2
  81.2   87.4  103.8  101.7   99.4    8.6
  96.9   98.1  107.7  114.0  102.8    7.2
 -----  -----  -----  -----  -----  -----
 131.5  135.0  141.7  147.8  125.9   10.5
-----------------------------------------

 1982   1983    1984   1985   AVG.  C.O.V.

  70.7   74.5   85.6   83.9   91.8   13.7
  84.8   96.1  116.2  105.6  106.1    9.4
 207.1  227.6  311.6  329.9  174.0   40.3
  83.0   90.3   96.8   96.0  103.2    8.4
 -----  -----  -----  -----  -----  -----
 131.5  135.0  141.7  147.8  125.9   10.5
-----------------------------------------

 1982   1983    1984   1985   AVG.  C.O.V.

 114.0  113.3  114.2  116.8  109.6    5.0
 117.8  145.0  147.4  157.4  130.3   13.5
  99.0  107.9  123.5  125.4  113.5    7.6
  73.9   74.0   74.8   73.6   93.0   17.0
 -----  -----  -----  -----  -----  -----
 131.5  135.0  141.7  147.8  125.9   10.5
-----------------------------------------

 1982   1983    1984   1985   AVG.  C.O.V.

 114.4  111.9  117.8  128.2  114.4    7.3
  88.7   93.4  102.6  109.9  107.7    8.1
 -----  -----  -----  -----  -----  -----
 131.5  135.0  141.7  147.8  125.9   10.5
-----------------------------------------

 1982   1983    1984   1985   AVG.  C.O.V.

 124.6  120.7  120.8  123.6  114.9    6.9
 106.1  120.6  124.9  130.0  114.2    8.9
  88.7   95.1  109.6  110.9  105.7    6.5
  93.2   94.2  102.4  107.4  101.2    6.4
 -----  -----  -----  -----  -----  -----
 131.5  135.0  141.7  147.8  125.9   10.5
-----------------------------------------

 1982   1983    1984   1985   AVG.  C.O.V.

  81.2   87.4  103.8  101.7   99.4    8.6
  99.0  107.9  123.5  125.4  113.5    7.6
  88.6   92.8  104.2  109.0  106.4    7.8
 -----  -----  -----  -----  -----  -----
 131.5  135.0  141.7  147.8  125.9   10.5
-----------------------------------------
```

Exports

Exports, as a part of aggregate demand, are a vital driving force for the economy. This is especially true in an open economy like Canada, which exports approximately 30 percent of all the goods and services produced here. Figure 49 depicts the current dollar value of gross exports for the four industries from 1971 to 1986. The mineral industry outperforms the other three, with exports rising from four billion dollars in 1971, up to nearly nineteen billion in 1986. Over the same period forestry went from three billion to 17.6 billion, agriculture from 2.5 to 11.3 billion and petroleum from 1.2 to 8.4 billion dollars. Even the effects of the 1980-1982 recession, which hit the mineral sector particularly hard, did not drop it below forestry, its nearest rival. The effects of the fall in oil prices shows up in the drop in export value suffered by the petroleum industry in 1986.

Not all the news was good for the mineral industry. In 1986 mineral exports made up 15.5 percent of the value of all commodities exported, down from its highest level of 22.2 percent reached in 1971. This has been part of a long-term trend dating back to the mid-sixties, when minerals accounted for over 30 percent of total merchandise exported. Resources in general have also diminished in importance. Overall, resources made up 46.3 percent of the total value of exports in 1986. This was down approximately ten percentage points from its average in the 1970s, where it peaked in 1974 at 66.2 percent. In fact, 1985 marked the first year that resources failed to make up the majority of exports, dropping below the 50 percent level to 48.3 percent. Thus, while resource exports are still rising in value, they are doing so at a slower pace than other exported goods in the economy.

Exports expressed in constant 1986 dollars are graphed in figure 50. Although the growth trends flatten out somewhat when expressed in constant dollars, positive patterns are still clearly evident. Both minerals and forestry reached their peak export values in the early eighties. While both industries have partially recovered from the recession, neither has managed to reach their respective highs attained in 1980 and 1979. Once again the fall in petroleum prices and, to a lesser extent, agricultural prices, show up in declining export values.

Figure 51 graphs exports as a percentage of gross output. Petroleum exports rose to a high of 42 percent of its gross output in 1974 before falling dramatically to less than half that level by 1986. The other three industries have shown increases in the percentage of output exported in the late seventies and early eighties. Year-to-year growth rates are illustrated in figure 52.

Rail Freight Loaded

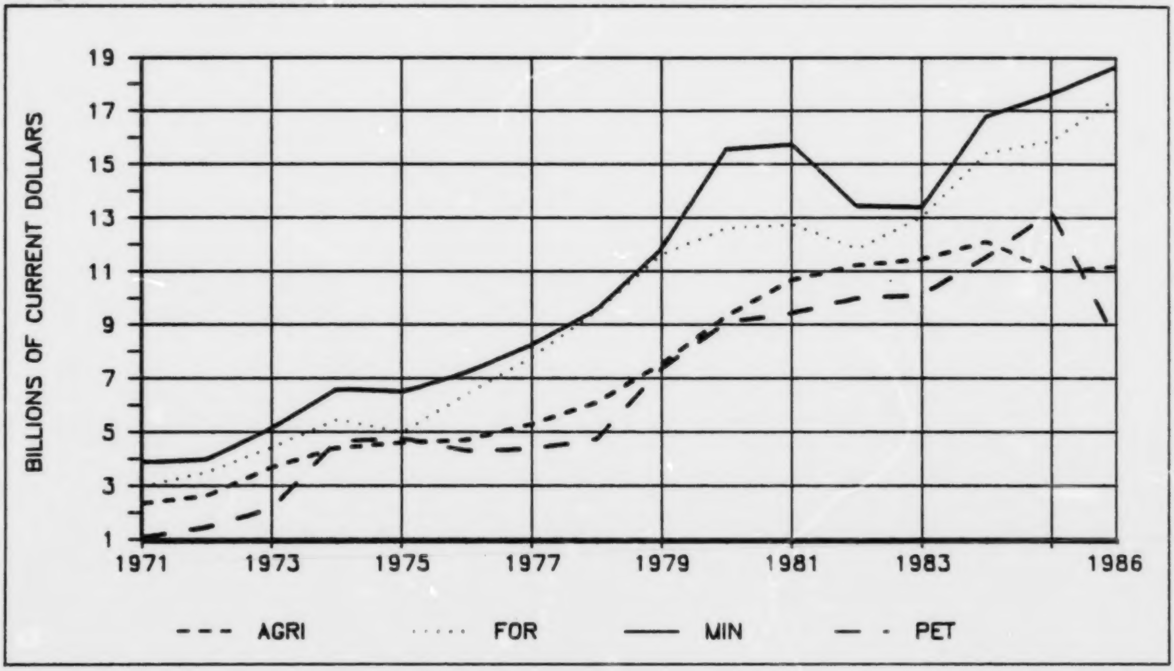
Figure 53 illustrates rail freight loaded in millions of metric tonnes, for both crude and fabricated materials. The mineral industry clearly dominates this field, with more mineral freight being loaded in any one year than for the other three resource industries combined. Moreover, only minerals show any growth in terms of tonnes loaded. Mineral tonnes loaded has increased from just over 100 million tonnes in 1970 to reach a record 134 million tonnes in 1985. Both forestry and agriculture have hovered between the 30- and 40-million tonne plateau, while petroleum has actually been declining since the mid-seventies.

In terms of relative performance, the mineral industry also dominates. Minerals have averaged approximately 60 percent of total resource freight loaded and roughly 54 percent of all freight loaded. Forestry and agriculture have both averaged around 17 percent of resource freight loaded and 15 percent of total freight loaded. Petroleum has fallen from 5.8 percent of resource freight in 1970 (5.4 percent of total) to 3.2 percent of resource freight (2.7 percent total) in 1986. Resources overall have averaged approximately 90 percent of total freight loaded, although this has fallen to 87 percent in the last three years.

Figure 54 shows the growth rates for freight loaded. The mineral industry is more volatile than the other industries, with large gains in 1973, 1979 and 1984, and large losses in 1978 and 1982.

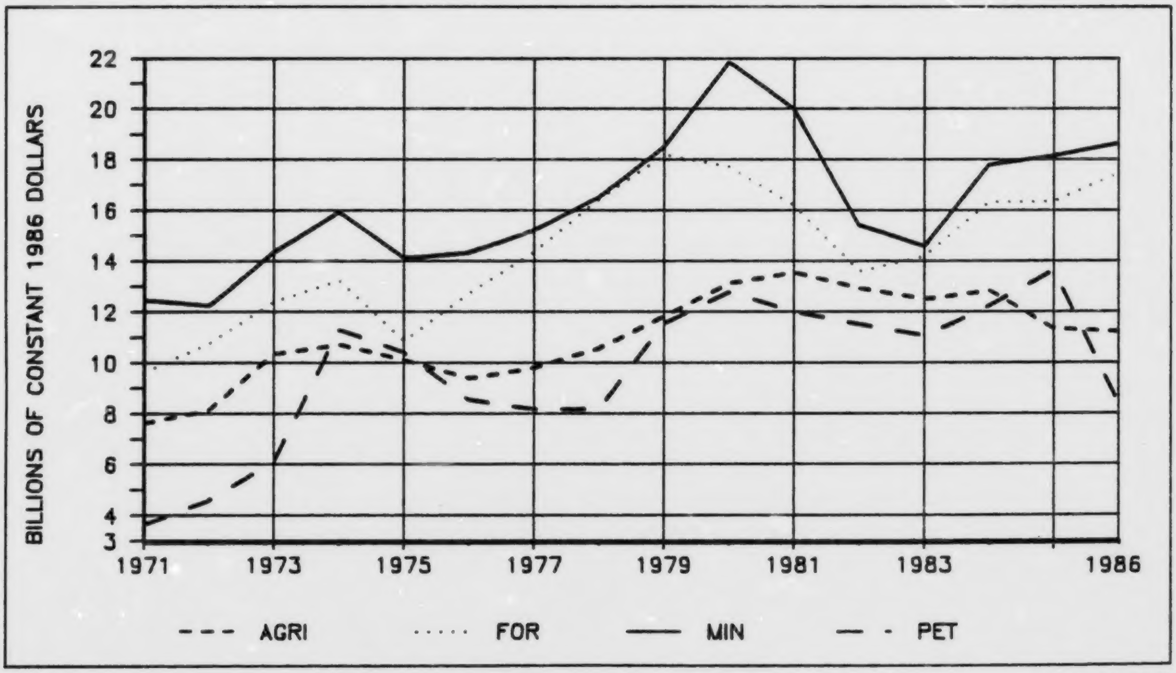
EXPORTS: Crude and Fabricated Material

Figure 49. Exports, Crude and Fabricated Material, Current Dollars



(ref: table G1)

Figure 50. Exports, Crude and Fabricated Material, Constant 1986 Dollars

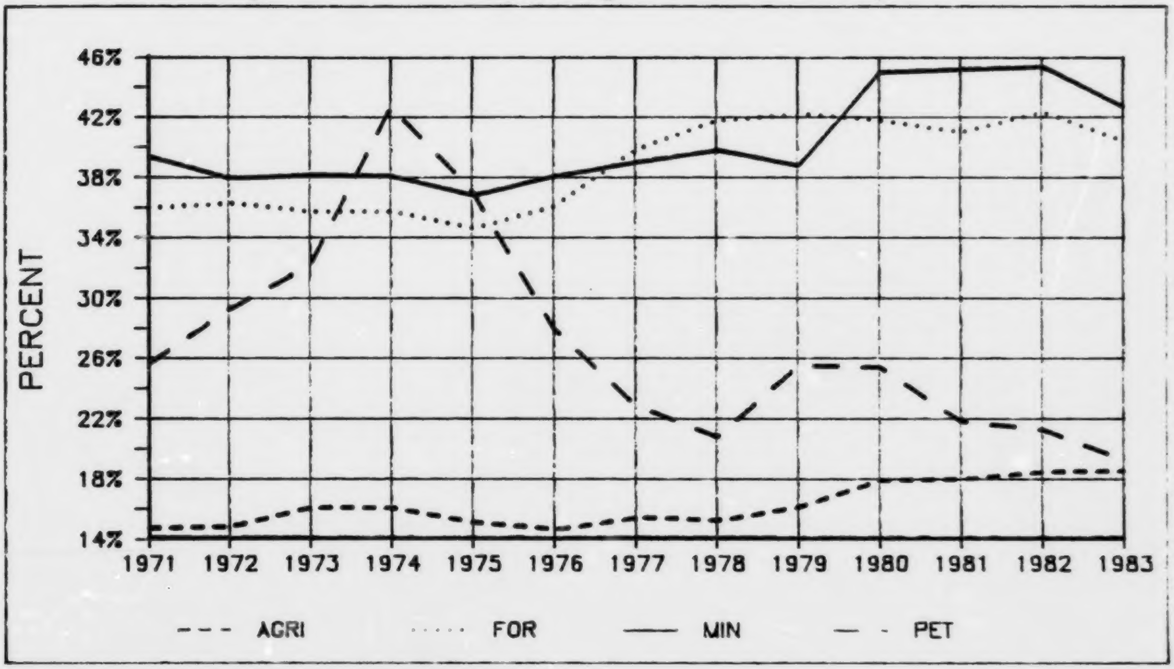


(ref: table G2)

Source: Statistics Canada, Catalogue 65–001.
Constant Dollars Derived Using G.N.E. Deflator

EXPORTS: Crude and Fabricated Material

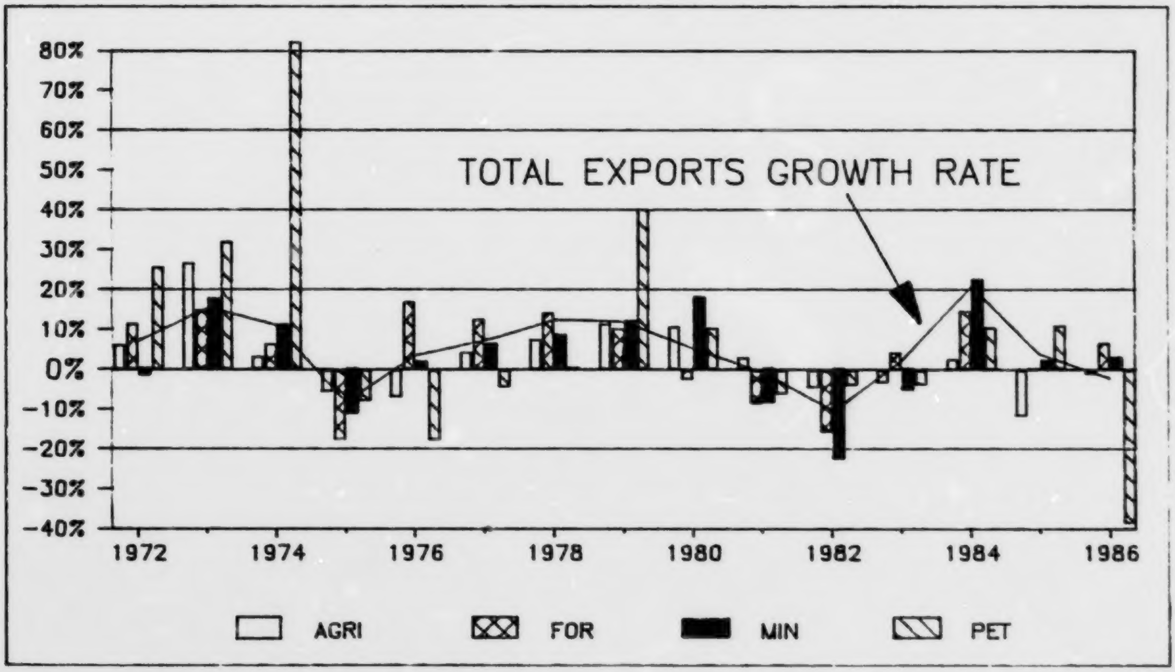
Figure 51. Exports, Crude and Fabricated Material
Exports as a Percentage of Gross Output



(ref: table G1)

(ref: table A5)

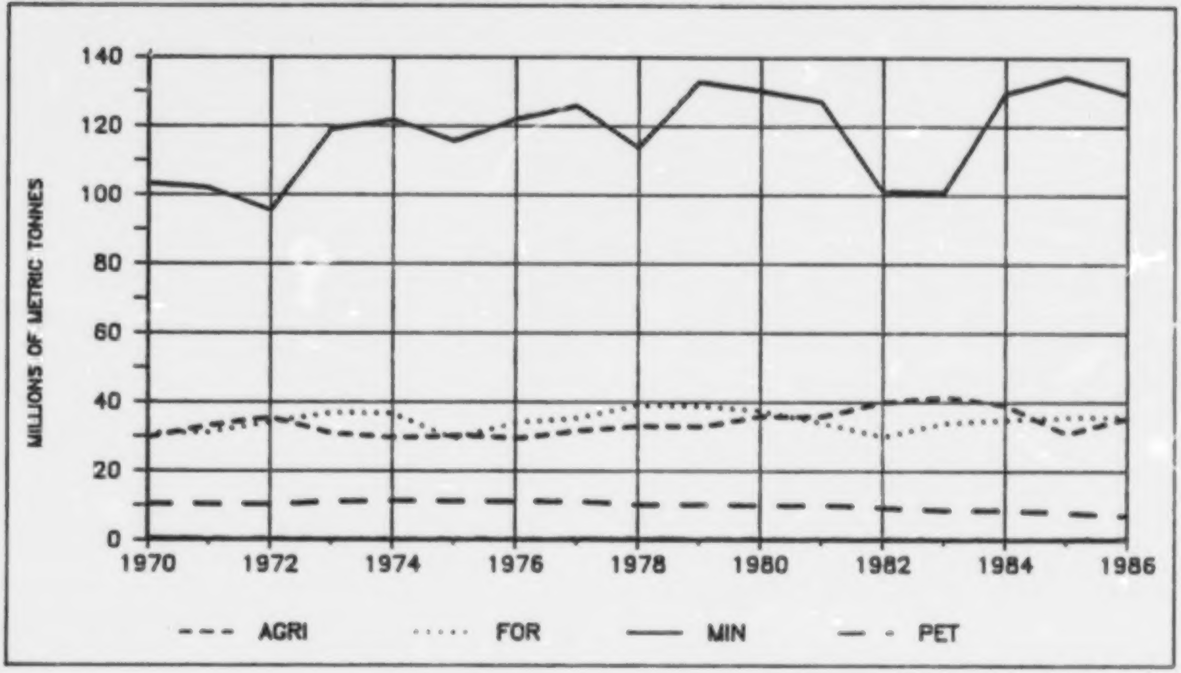
Figure 52. Exports, Crude and Fabricated Material, Growth Rates



Source: Statistics Canada, Catalogue 65-001.
(ref: table G2)
Figure 52 Based on Constant (1986) Dollar Series Using G.N.E. Deflator.
Growth Rate is Defined as Percentage Change From Previous Year.

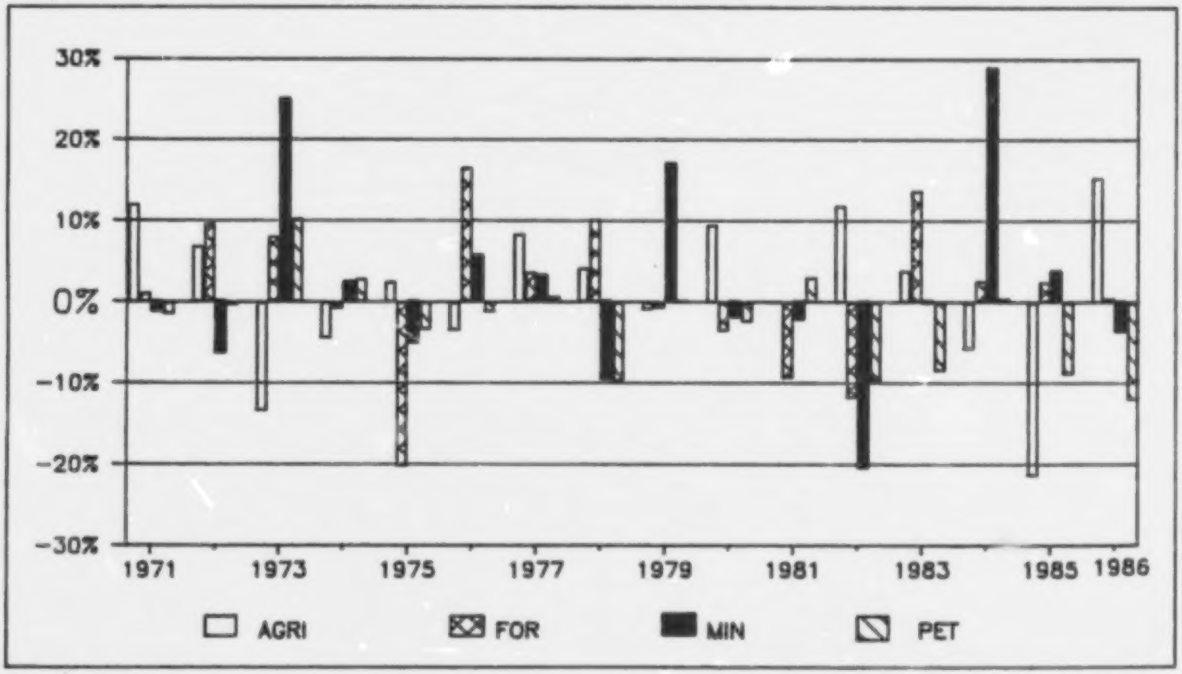
RAIL FREIGHT LOADED

Figure 53. Rail Freight Loaded, Millions of Metric Tonnes



(ref: table G3)

Figure 54. Rail Freight Loaded, Growth Rates



(ref: table G3)

Source: Statistics Canada, Catalogue 52–001.
Growth Rate is Defined as Percentage Change From Previous Year.

Table G

TABLE 1: TOTAL EXPORTS
CRUDE AND FABRICATED MATERIALS

CURRENT DOLLARS (MILLIONS)	1970	1971	1972	1973	1974	1975	1976	1977	1978
AGRICULTURE	NA	2450	2737	3793	4521	4719	4811	5404	6209
FORESTRY	NA	3080	3612	4536	5572	5076	6519	7894	9634
MINERAL SECTOR	NA	3965	4090	5243	6704	6577	7331	8358	9673
PETROLEUM	NA	1181	1561	2252	4767	4860	4378	4493	4828
TOTAL RESOURCES	NA	10676	12000	15824	21564	21232	23039	26149	30344
ALL COMMODITIES	NA	17877	20129	25461	32591	33511	38166	44498	53362

TABLE 2: TOTAL EXPORTS
CRUDE AND FABRICATED MATERIALS

CONSTANT 1986 DOLLARS (MILLIONS)	1970	1971	1972	1973	1974	1975	1976	1977	1978
AGRICULTURE	NA	7742.0	8237.1	10458.9	10814.8	10192.8	9478.0	9911.0	10674.9
FORESTRY	NA	9732.8	10870.4	12507.6	13328.9	10963.9	12842.9	14477.7	16563.4
MINERAL SECTOR	NA	12529.4	12309.0	14457.1	16036.8	14206.0	14442.6	15328.7	16630.4
PETROLEUM	NA	3732.0	4697.9	6209.7	11403.3	10497.3	8625.0	8240.2	8300.6
TOTAL RESOURCES	NA	33736.16	36114.28	43633.36	51583.83	45859.95	45388.55	47957.53	52169.22
ALL COMMODITIES	NA	56491.3	60578.7	70206.6	77961.8	72381.9	75189.9	81609.8	91743.2

TABLE 3: RAIL FREIGHT LOADED
CRUDE AND FABRICATED MATERIAL

METRIC TONNES (THOUSANDS)	1970	1971	1972	1973	1974	1975	1976	1977	1978
AGRICULTURE	29335.4	32899.5	35186.2	30475.8	29126.0	29875.5	28830.7	31274.2	32604.6
FORESTRY	30406.7	30778.8	33768.7	36523.3	36217.2	28887.2	33701.5	34955.3	38549.4
MINERAL SECTOR	102878.8	101472.6	94898.3	118567.8	121384.9	115030.2	121518.3	125379.4	113181.9
PETROLEUM	9995.9	9845.9	9812.4	10829.0	11145.1	10761.7	10627.4	10706.4	9668.6
TOTAL RESOURCE FREIGHT	172616.8	174996.8	173665.6	196395.9	197873.2	184554.6	194677.9	202315.3	194004.5
TOTAL CARLOAD TRAFFIC LOADED	186816.4	192188.9	192676.9	216739.0	219854.1	206013.1	217846.9	226747.6	218782.7

1979	1980	1981	1982	1983	1984	1985	1986
7649	9451	10777	11337	11558	12218	11083	11290
11735	12731	12865	11942	13136	15530	15988	17591
11937	15683	15853	13514	13458	16910	17741	18768
7477	9207	9549	10107	10234	11647	13328	8442
-----	-----	-----	-----	-----	-----	-----	-----
38798	47072	49044	46900	48386	56305	58140	56091
65582	76681	84468	84540	90825	112219	120258	121079

1979	1980	1981	1982	1983	1984	1985	1986	AVG.	C.O.V.
11924.4	13226.4	13638.5	13003.6	12589.9	12943.0	11415.3	11290.0	11096.3	15.3
18294.3	17816.6	16280.9	13697.5	14308.8	16451.5	16467.4	17591.0	14512.2	17.8
18609.2	21947.9	20062.3	15500.6	14659.5	17913.4	18273.0	18768.0	16354.6	16.0
11656.3	12884.9	12084.4	11592.8	11147.7	12338.1	13727.7	8442.0	9723.7	29.5
-------	-------	-------	-------	-------	-------	-------	-------	-------	-------
60484.30	65875.78	62066.09	53794.55	52705.88	59645.92	59883.44	56091	51686.9	17.2
102239.3	107312.6	106895.8	96967.8	98933.8	118877.7	123864.2	121079.0	91395.8	22.7

1979	1980	1981	1982	1983	1984	1985	1986	AVG.	C.O.V.
32291.9	35381.9	35342.3	39569.0	41122.9	38718.3	30419.7	35116.3	33386.48	11.06420
38255.1	36876.5	33414.7	29472.7	33545.5	34446.7	35318.5	35510.7	34154.61	8.211024
132414.7	129667.8	126599.5	100488.7	100266.8	129105.9	133935.0	128845.5	117390.3	10.68314
9693.7	9456.7	9751.9	8809.3	8061.8	8105.0	7384.0	6498.3	9479.594	13.38207
--------	--------	--------	--------	--------	--------	--------	--------	--------	------
212655.4	211382.9	205108.4	178339.7	182997	210375.9	207057.2	205970.8	194411.0	6.979981
237379.8	235601.7	229689.6	199436.4	206676.1	239865.6	237874.2	237012	217717.7	7.903711

Investments

Investment constitutes another of the critical components of aggregate demand and creates the plant and equipment which facilitate future productive activity. The following statistics refer to net investment or capital expenditure only. That is to say, it includes only that investment which contributes to new plant and equipment and excludes repair expenditures.

Figure 55 depicts investment in the primary stage of activity. Agriculture leads all other industries in the seventies but is surpassed by petroleum in the eighties. Investment in mining showed signs of growing strength from 1978-1981 but, once again, recession took its toll thereafter. Mining investment peaked in 1981 at three billion current dollars. Agriculture also peaked in 1981 at 4.9 billion, while petroleum investment continued to climb through to 1985, closing that year at 8.6 billion dollars. Investment in forestry rose from 94 million in 1971 to 243 million dollars in 1987.

In constant 1986 dollars (figure 56), mining exhibits an overall flat investment pattern with a peak in 1981. Agriculture peaks in 1979 in constant dollars, and falls for six straight years thereafter. Petroleum showed strong growth trends until 1985 when investment levels plummeted. Forestry once more is quite stable, falling slightly since the early seventies.

Figures 57 and 58 depict the breakdown of the mining industry. Unfortunately, only a metal mining/other mining breakdown was available for investment. Except for the year 1983, metal mining has had larger investment expenditures than the "other" category. Investment expenditures for both types of mining increased substantially in the late seventies and into the early eighties. This may seem strange at first, given that the recession affected the mining industry early in 1980, as was evident in the output, GDP and export figures. However, given the time lag between investment decisions and implementation, the increased investment as late as 1983 was likely the result of decisions made in the late seventies when prices were high and expectations optimistic. While the current dollar series shows a rising trend overall, the constant dollar series shows just the opposite, despite the jump in the late seventies.

In processing activity (figures 59, 60), the mineral sector outpaced all other industries. The recession in the early eighties caused investment in the mineral sector to drop for two years but it regained this lost ground quickly, surpassing its 1981 high of 1.35 billion dollars by 1985 (1.39 billion). Both the mineral and petroleum sectors' investment dollar volumes increased quickly in the early eighties with investment in the mineral industry doubling in just two years (.6 billion in 1979 to 1.35 billion in 1981) and investment in petroleum processing rising by a factor of three from 0.3 billion in 1980 to 1.2 billion in 1982. However, while mineral investment has recovered from the decline in the following years, the petroleum industry has remained at its pre-1980 levels. Agriculture showed steady if less dramatic growth, while forestry investment was almost flat until 1987, rising from 150 million in 1971 to just over 740 million in 1987.

The constant dollar figures for processing are shown in figure 60. All four industries show little, if any, upward trends but the amount of volatility seems to be increasing over time. The mineral industry's investment rises and falls with the cycles of the sector (with the delay mentioned above). Petroleum investment rose until 1974, fell continuously until 1979 and then rose sharply until 1982. Since that time, investment in the petroleum sector has fallen to the lowest levels of the period. Agriculture and forestry showed the most stability, agriculture moderating about the one-billion plateau until 1987, and forestry falling moderately but consistently from 1973 to 1985, then rising through to 1987.

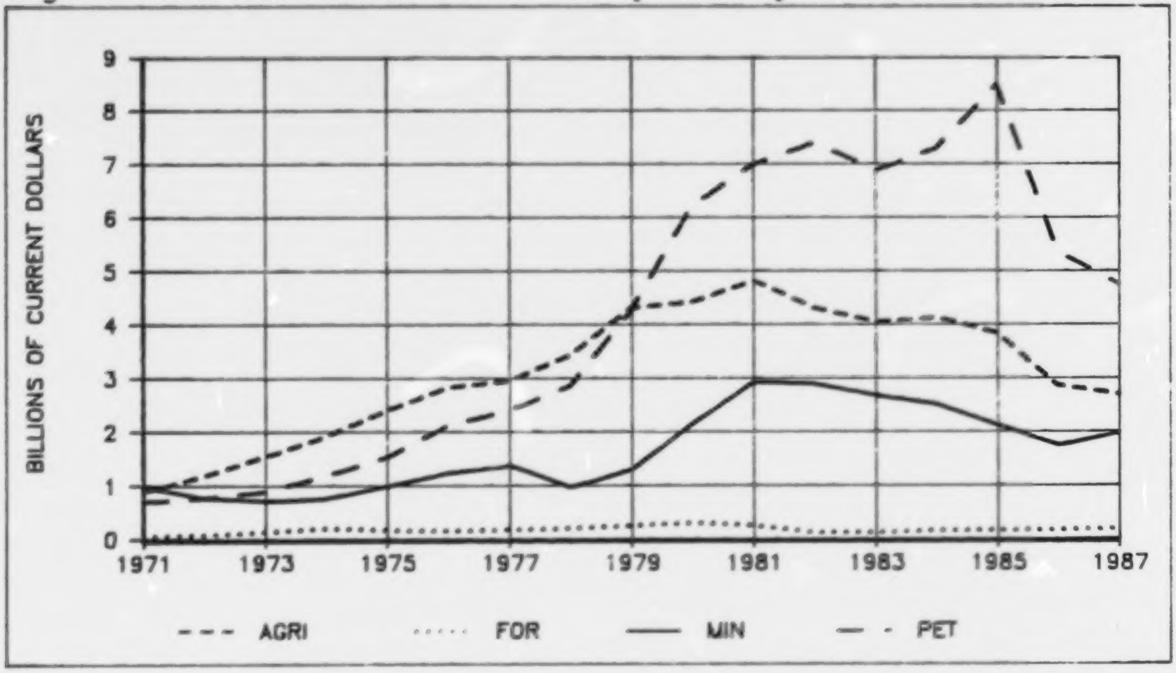
In the fabricating stage (figures 61, 62), forestry shows a large "blip" in the 1980s, rising in the 1979-81 period, falling in 1982-83, and picking up again through to 1987. Investment in mining showed steady improvement in the 1970s, but has since slackened. The constant dollar numbers are quite similar in pattern.

Total investment is illustrated in figures 63 and 64. All industries, except petroleum show fairly stable growth that peaked in 1981, fell for a couple of years, then started to recover. Investment in the petroleum sector showed by far the strongest investment patterns until dipping in 1986-87. Figure 64 illustrates the constant dollar series for total activity. The patterns are almost identical to those in the constant dollar primary stage (figure 56), with most industries reaching their highest net investment levels in 1981. Also of interest is the fact that, after diverging for most of the period under review, all four industries are once again converging towards almost identical levels of total investment.

The current and constant dollar series for the three stages of the mineral sector are shown in figures 65 and 66. The primary stage of activity once again dominates the other two stages. The constant dollar series shows that, except for the jump in 1978-81, investment expenditure trends have been flat over the period as a whole.

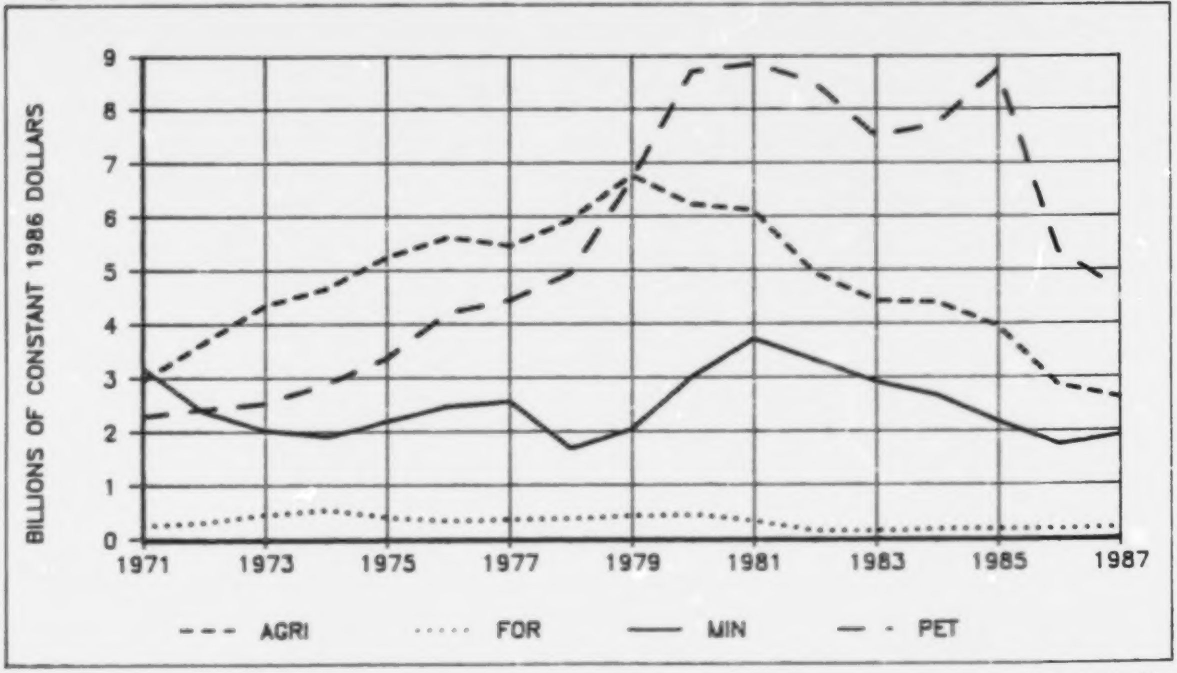
NET INVESTMENT: Primary Activity

Figure 55. Net Investment, Primary Activity, Current Dollars



(ref: table H1)

Figure 56. Net Investment, Primary Activity, Constant 1986 Dollars

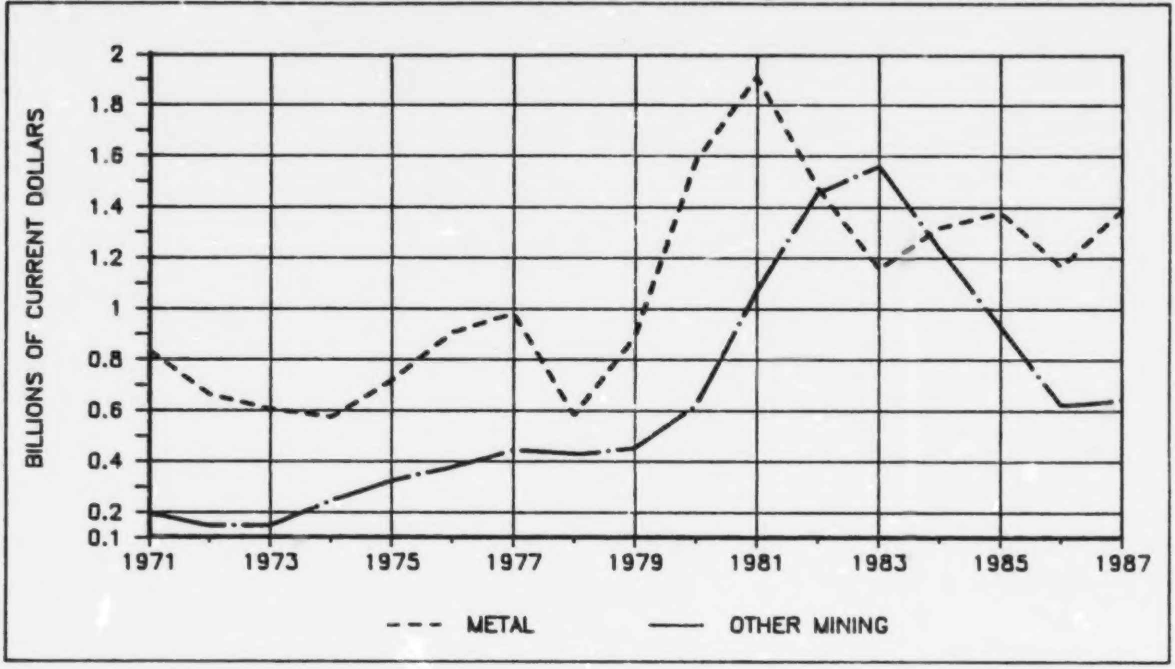


(ref: table I1)

Source: Statistics Canada, Catalogue 61–205, 61–206.
1986 preliminary actual; 1987 revised intentions.
Constant Dollars Derived Using G.N.E. Deflator

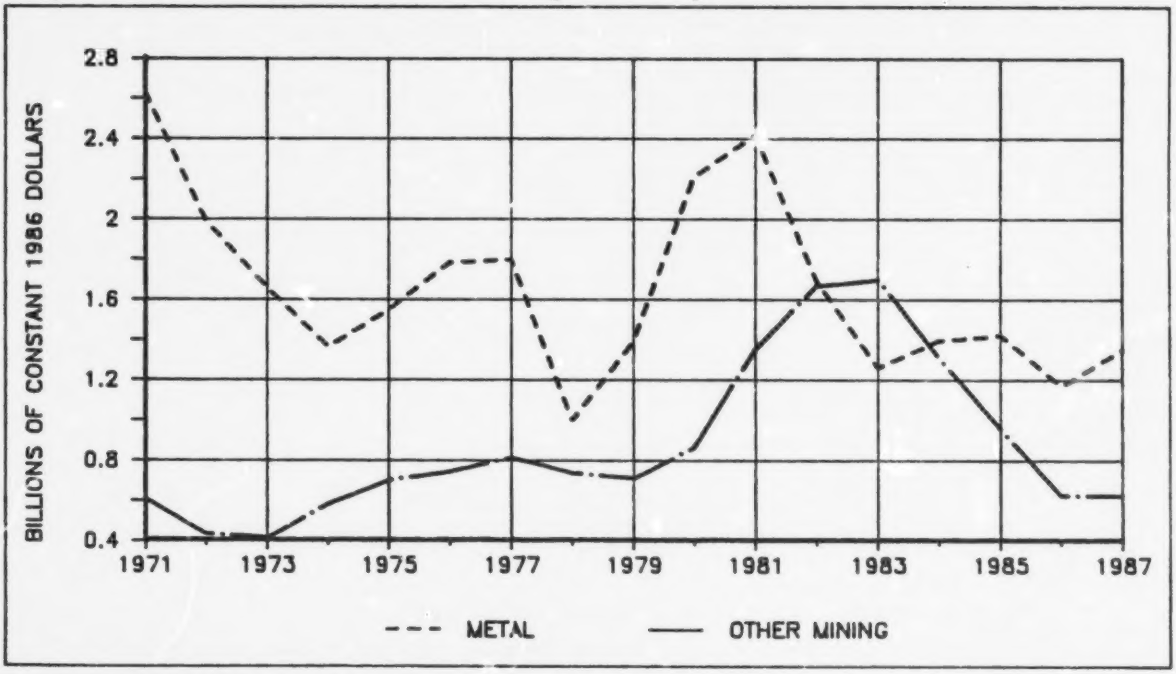
NET INVESTMENT: Mining Industry

Figure 57. Net Investment, Mining Industry, Current Dollars



(ref: table H2)

Figure 58. Net Investment, Mining Industry, Constant 1986 Dollars

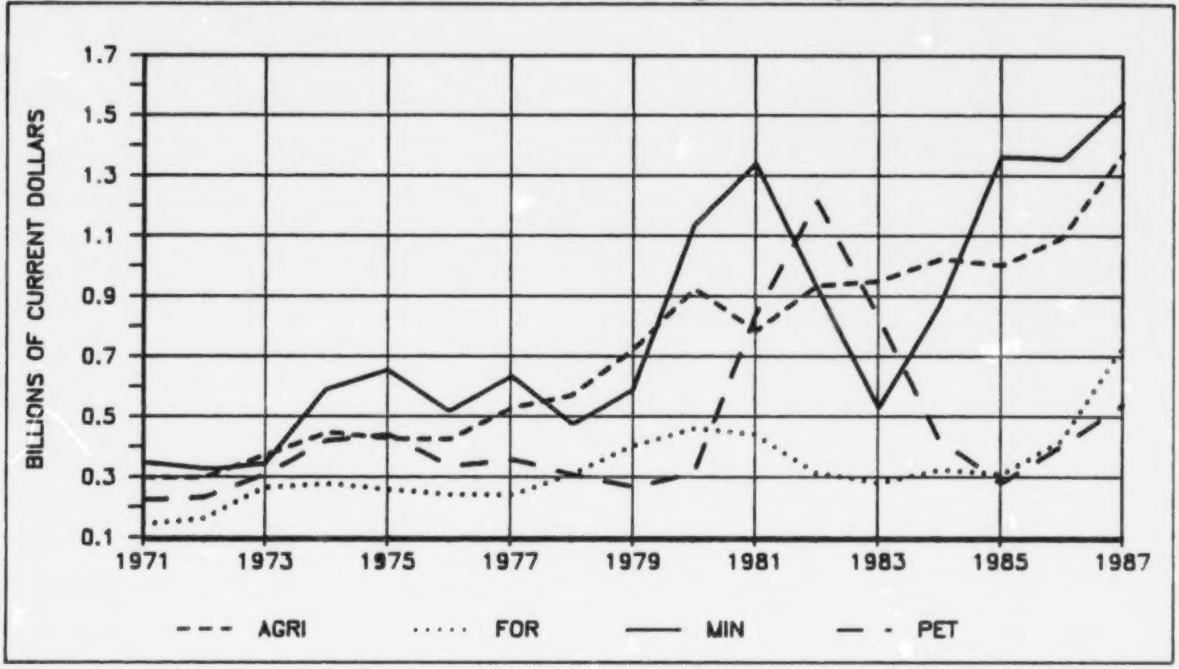


Source: Statistics Canada, Catalogue 61–205, 61–206.
Other Mining Includes: Non–Metal, Coal and Quarries.
Constant Dollars Derived Using G.N.E. Deflator

(ref: table I2)

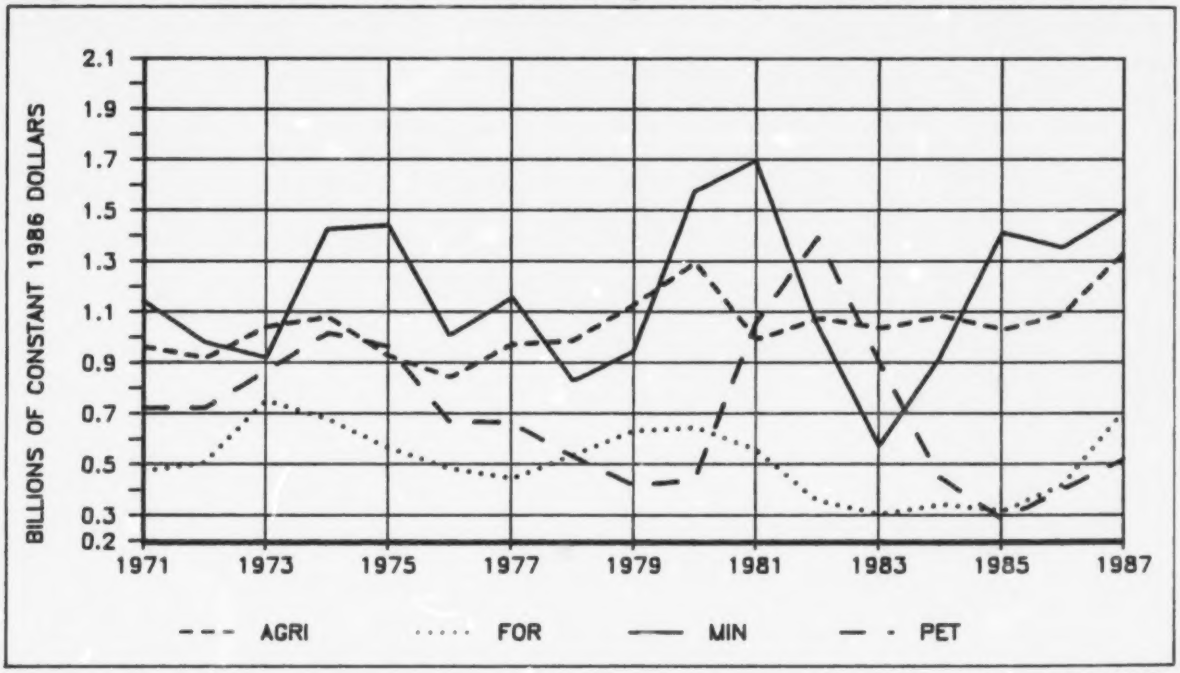
NET INVESTMENT: Processing Activity

Figure 59. Net Investment, Processing Activity, Current Dollars



(ref: table H3)

Figure 60. Net Investment, Processing Activity, Constant 1986 Dollars

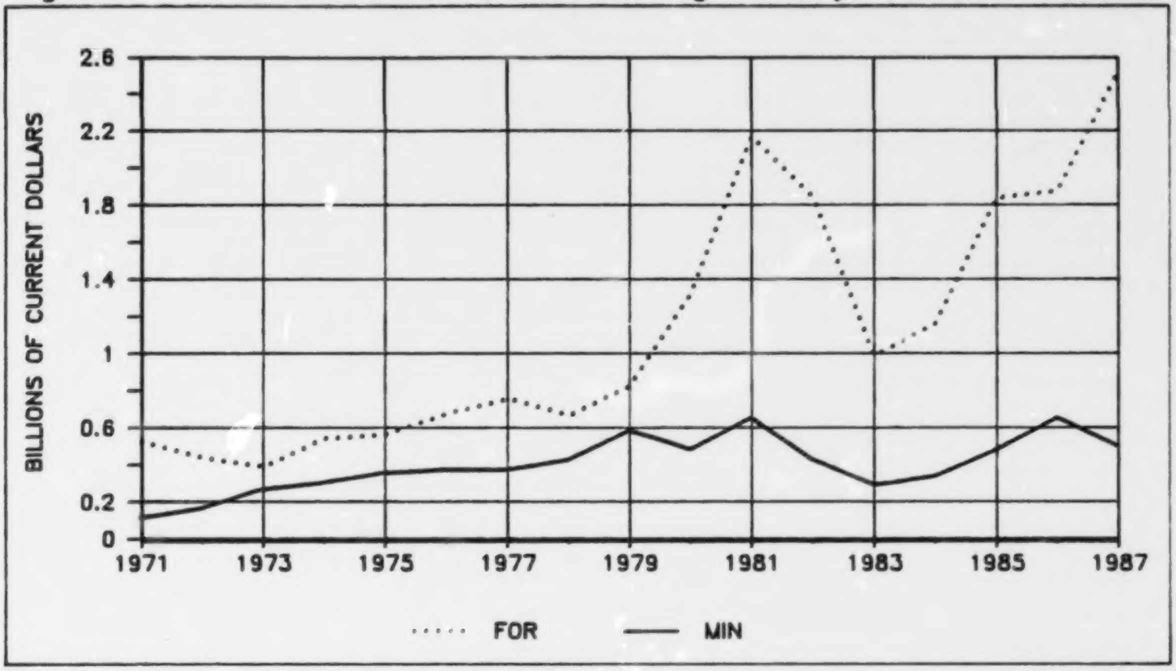


Source: Statistics Canada, Catalogue 61–205, 61–206, 61–214.
1986 preliminary actual; 1987 intentions or revised intentions.
Constant Dollars Derived Using G.N.E. Deflator

(ref: table I3)

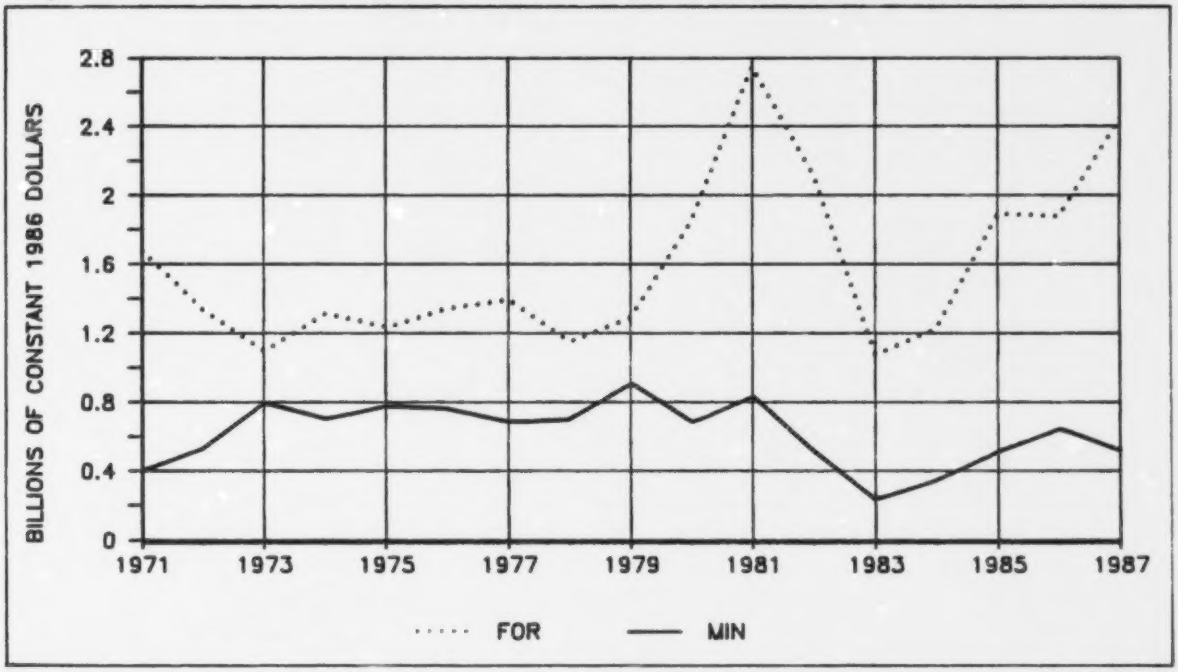
NET INVESTMENT: Fabricating Activity

Figure 61. Net Investment, Fabricating Activity, Current Dollars



(ref: table H4)

Figure 62. Net Investment, Fabricating Activity, Constant 1986 Dollars

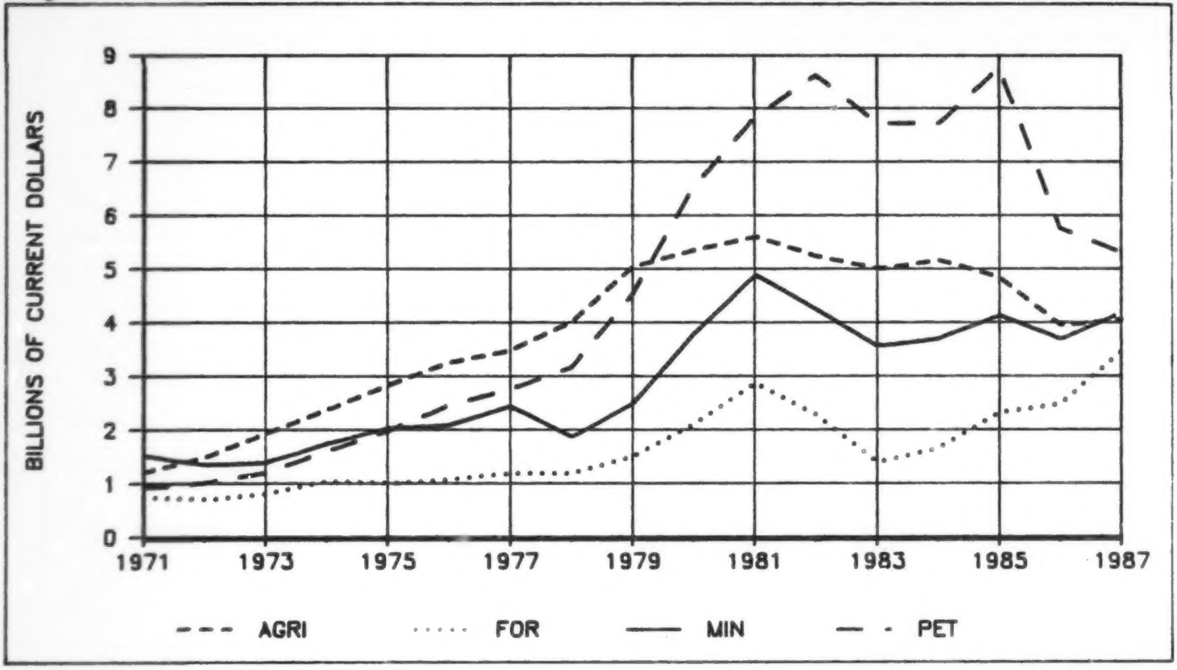


(ref: table I4)

Source: Statistics Canada, Catalogue 61–205, 61–206.
1986 preliminary; 1987 intentions or revised intentions.
Constant Dollars Derived Using G.N.E. Deflator

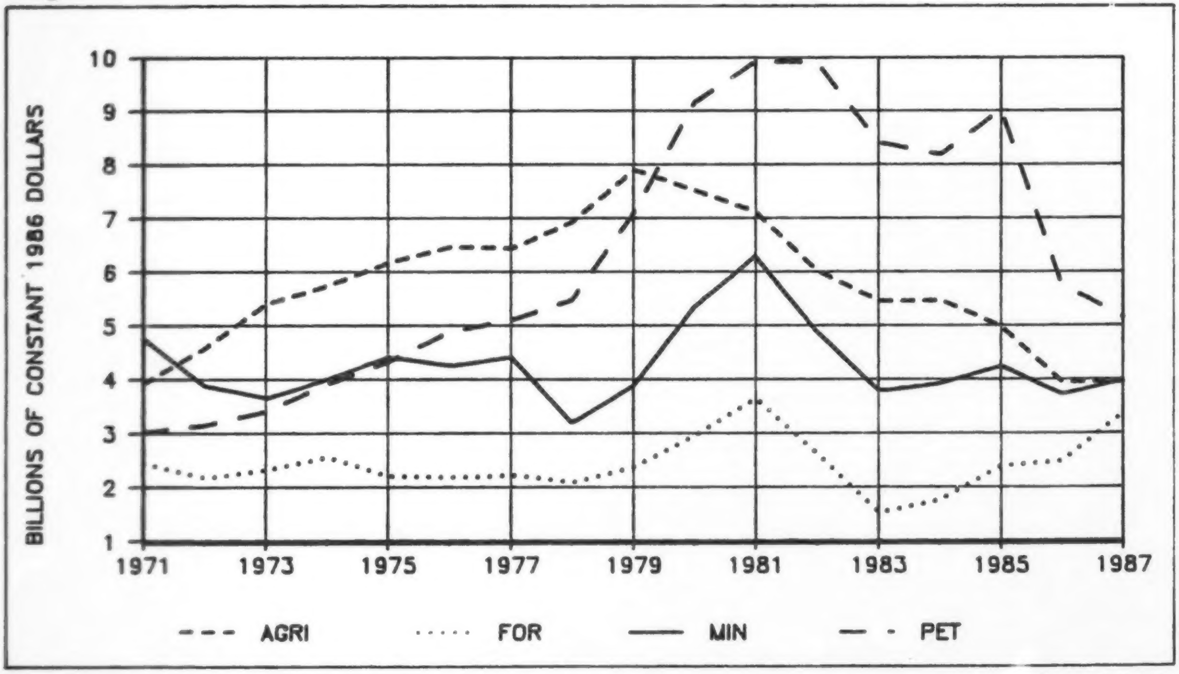
NET INVESTMENT: Total Activity

Figure 63. Net Investment, Total Activity, Current Dollars



(ref: table H5)

Figure 64. Net Investment, Total Activity, Constant 1986 Dollars

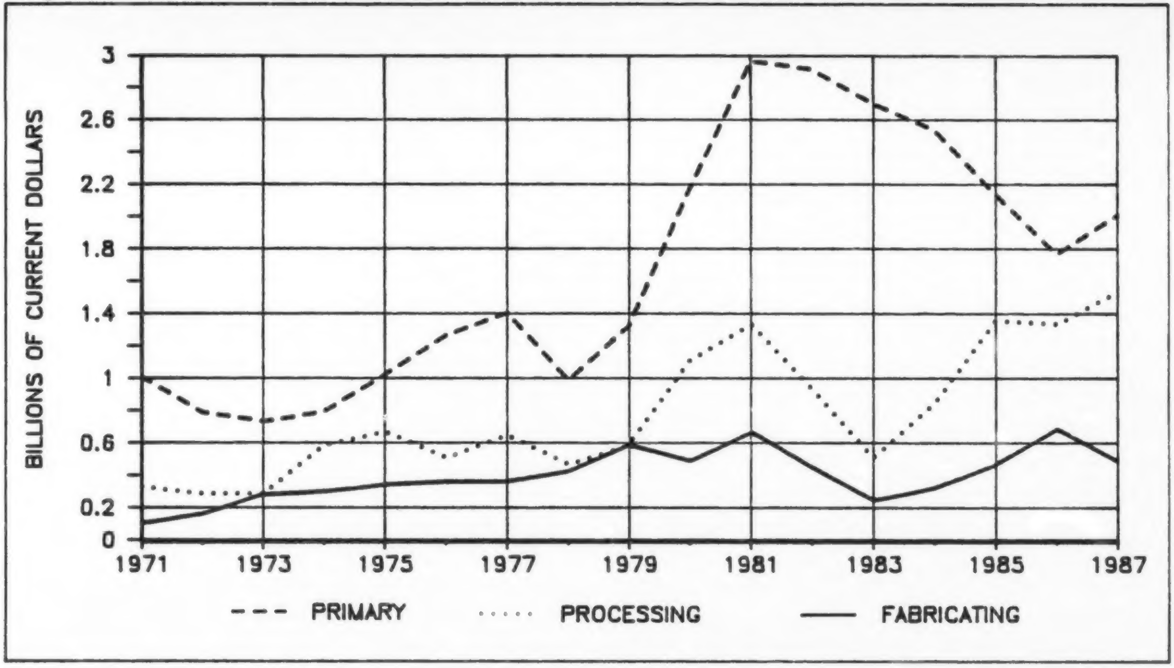


Source: Statistics Canada, Catalogue 61–205, 61–206, 61–214.
1986 preliminary actual; 1987 intentions or revised intentions.
Constant Dollars Derived Using G.N.E. Deflator

(ref: table I5)

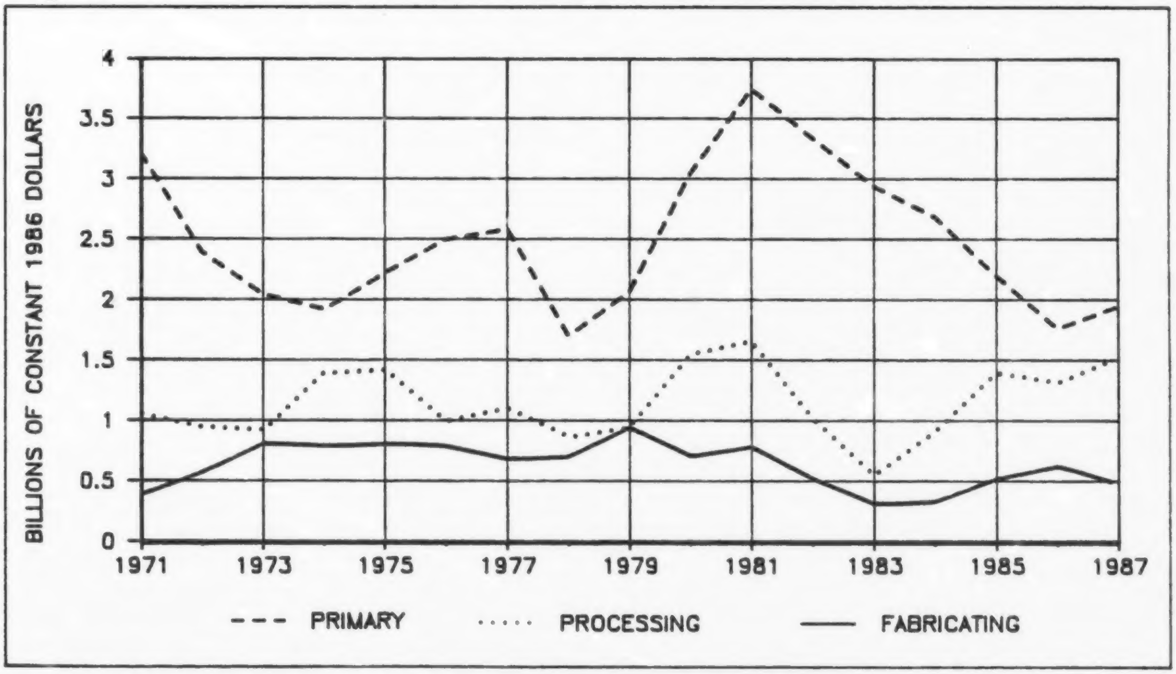
NET INVESTMENT: Mineral Sector

Figure 65. Net Investment, Mineral Sector, Current Dollars



(ref: table H6)

Figure 66. Net Investment, Mineral Sector, Constant 1986 Dollars



Source: Statistics Canada, Catalogue 61–205, 61–206. (ref: table I6)
1986 preliminary actual; 1987 intentions or revised intentions.
Constant Dollars Derived Using G.N.E. Deflator

Table H

TABLE 1: PRIMARY ACTIVITY				CURRENT DOLLARS (MILLIONS)						
NET INVESTMENT	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980
AGRICULTURE	950.0	1230.0	1593.6	1966.1	2447.8	2875.4	2996.3	3478.4	4367.5	4467.8
FORESTRY	94.0	117.0	179.4	243.6	195.5	186.8	220.5	240.9	300.6	343.0
MINERALS	1021.3	799.5	745.6	809.2	1037.3	1278.8	1419.4	1000.5	1339.4	2190.3
PETROLEUM	740.7	820.5	935.1	1226.2	1574.7	2162.1	2445.5	2902.9	4315.2	6253.4
TOTAL INVESTMENT: PRIMARY	2806.0	2967.0	3453.7	4245.1	5255.3	6503.1	7081.7	7622.7	10322.7	13254.5

TABLE 2: MINING INDUSTRY				CURRENT DOLLARS (MILLIONS)						
NET INVESTMENT	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980
METAL MINES	830.6	658.7	598.4	567.5	714.9	902.9	978.8	576.6	888.0	1576.3
OTHER MINING	190.2	141.1	147.2	241.7	322.4	375.9	440.6	423.9	451.4	614.0
TOTAL MINING	1020.8	799.8	745.6	809.2	1037.3	1278.8	1419.4	1000.5	1339.4	2190.3

TABLE 3: PROCESSING				CURRENT DOLLARS (MILLIONS)						
NET INVESTMENT	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980
AGRICULTURE	308.0	308.2	381.8	456.1	433.7	432.6	536.7	581.3	731.5	933.4
FORESTRY	153.5	172.9	276.7	287.5	266.4	250.4	248.3	318.8	413.2	469.0
MINERALS	364.9	328.8	334.1	601.0	676.4	523.4	641.4	489.9	608.6	1150.2
PETROLEUM	231.4	243.8	318.8	429.5	450.4	344.2	366.6	315.1	274.0	324.7
TOTAL INVESTMENT: PROCESSING	1057.8	1053.7	1311.4	1774.1	1826.9	1550.6	1793.0	1705.1	2027.3	2877.3

TABLE 4: FABRICATING				CURRENT DOLLARS (MILLIONS)						
NET INVESTMENT	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980
FORESTRY	536.0	448.0	402.4	554.3	577.3	688.7	767.8	677.3	837.8	1332.9
MINERALS	132.7	188.4	290.0	309.5	367.4	389.8	387.6	426.5	600.0	517.7
TOTAL INVESTMENT: FABRICATING	668.7	636.4	692.4	863.8	944.7	1078.5	1155.4	1103.8	1437.8	1850.6

TABLE 5: TOTAL ACTIVITY				CURRENT DOLLARS (MILLIONS)						
NET INVESTMENT	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980
AGRICULTURE	1258.0	1538.2	1975.4	2422.2	2881.5	3308.0	3533.0	4059.7	5099.0	5401.2
FORESTRY	783.5	737.9	858.5	1085.4	1039.2	1125.9	1236.6	1237.0	1551.6	2144.9
MINERALS	1518.9	1316.7	1369.7	1719.7	2081.1	2192.0	2448.4	1916.9	2548.0	3858.2
PETROLEUM	972.1	1064.3	1253.9	1655.7	2025.1	2506.3	2812.1	3218.0	4589.2	6578.1
TOTAL INVESTMENT:TOTAL ACTIVITY	4532.5	4657.1	5457.5	6883.0	8026.9	9132.2	10030.1	10431.6	13787.8	17982.4

TABLE 6: MINERAL SECTOR				CURRENT DOLLARS (MILLIONS)						
NET INVESTMENT	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980
MINING	1021.3	799.5	745.6	809.2	1037.3	1278.8	1419.4	1000.5	1339.4	2190.3
PROCESSING	364.9	328.8	334.1	601.0	676.4	523.4	641.4	489.9	608.6	1150.2
FABRICATING	132.7	188.4	290.0	309.5	367.4	389.8	387.6	426.5	600.0	517.7
TOTAL INVESTMENT: MINERALS	1518.9	1316.7	1369.7	1719.7	2081.1	2192.0	2448.4	1916.9	2548.0	3858.2

```
*************************************************************

  1981    1982    1983    1984    1985    1986    1987

 4859.9  4341.6  4086.5  4178.8  3137.5  2892.0  2729.6
  281.7   148.0   154.9   199.5   205.1   211.0   243.1
 2973.2  2921.9  2708.3  2545.2  2299.6  1779.2  2025.7
 7031.4  7439.7  6914.7  7330.2  8605.6  5388.1  4795.4
 ------  ------  ------  ------  ------  ------  ------
15146.2 14851.2 13864.4 14253.7 14247.8 10270.3  9793.8
-------------------------------------------------------------

  1981    1982    1983    1984    1985    1986    1987

 1907.7  1470.0  1151.1  1314.9  1375.9  1161.2  1385.9
 1065.5  1451.9  1557.2  1230.3   923.7   618.0   639.8
 ------  ------  ------  ------  ------  ------  ------
 2973.2  2921.9  2708.3  2545.2  2299.6  1779.2  2025.7
-------------------------------------------------------------

  1981    1982    1983    1984    1985    1986    1987

  792.4   944.6   959.7  1031.8  1092.6  1103.4  1385.3
  447.8   320.3   288.8   334.1   327.2   430.5   742.4
 1353.3   941.8   539.9   882.7  1385.8  1364.1  1559.1
  844.9  1224.5   840.8   432.4   335.7   412.6   550.1
 ------  ------  ------  ------  ------  ------  ------
 3438.4  3431.2  2629.2  2681.0  3141.3  3310.6  4236.9
-------------------------------------------------------------

  1981    1982    1983    1984    1985    1986    1987

 2182.7  1855.5   998.9  1172.4  2035.6  1889.6  2532.8
  657.2   460.6   298.1   359.4   509.7   644.5   528.6
 ------  ------  ------  ------  ------  ------  ------
 2839.9  2316.1  1297.0  1531.8  2545.3  2534.1  3061.4
-------------------------------------------------------------

  1981    1982    1983    1984    1985    1986    1987

 5652.3  5286.2  5046.2  5210.6  4230.1  3995.4  4114.9
 2912.2  2323.8  1442.6  1706.0  2567.9  2531.1  3518.3
 4983.7  4324.3  3546.3  3787.3  4195.1  3787.8  4113.4
 7876.3  8664.2  7755.5  7762.6  8941.3  5800.7  5345.5
 ------  ------  ------  ------  ------  ------  ------
21424.5 20598.5 17790.6 18466.5 19934.4 16115.0 17092.1
-------------------------------------------------------------

  1981    1982    1983    1984    1985    1986    1987

 2973.2  2921.9  2708.3  2545.2  2299.6  1779.2  2025.7
 1353.3   941.8   539.9   882.7  1385.8  1364.1  1559.1
  657.2   460.6   298.1   359.4   509.7   644.5   528.6
 ------  ------  ------  ------  ------  ------  ------
 4983.7  4324.3  3546.3  3787.3  4195.1  3787.8  4113.4
-------------------------------------------------------------
```

Table I

TABLE 1: PRIMARY ACTIVITY — CONSTANT 1986 DOLLARS (MILLIONS)

NET INVESTMENT	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980
AGRICULTURE	3002.0	3701.7	4394.2	4703.2	5287.1	5664.8	5495.2	5980.3	6808.7	6252.5
FORESTRY	297.0	352.1	494.7	582.7	422.3	368.0	404.4	414.2	468.6	480.0
MINERALS	3227.3	2406.1	2055.9	1935.7	2240.5	2519.3	2603.2	1720.1	2088.1	3065.3
PETROLEUM	2340.6	2469.3	2578.5	2933.2	3401.3	4259.5	4485.1	4990.8	6727.2	8751.4
TOTAL INVESTMENT: PRIMARY	8867.0	8929.3	9523.3	10154.8	11351.2	12811.6	12987.9	13105.4	16092.6	18549.3

TABLE 2: MINING INDUSTRY — CONSTANT 1986 DOLLARS (MILLIONS)

NET INVESTMENT	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980
METAL MINES	2624.7	1982.4	1650.0	1357.5	1544.1	1778.8	1795.1	991.3	1384.4	2206.0
OTHER MINING	601.0	424.6	405.9	578.2	696.4	740.6	808.1	728.8	703.7	859.3
TOTAL MINING	3225.7	2407.0	2055.9	1935.7	2240.5	2519.3	2603.2	1720.1	2088.1	3065.3

TABLE 3: PROCESSING — CONSTANT 1986 DOLLARS (MILLIONS)

NET INVESTMENT	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980
AGRICULTURE	973.3	927.5	1052.8	1091.0	936.8	852.3	984.3	999.4	1140.4	1306.3
FORESTRY	485.1	520.3	763.0	687.7	575.4	493.3	455.4	548.1	644.2	656.4
MINERALS	1153.1	989.5	921.3	1437.7	1461.0	1031.1	1176.3	842.3	948.8	1609.7
PETROLEUM	731.2	733.7	879.1	1027.4	972.8	678.1	672.3	541.7	427.2	454.4
TOTAL INVESTMENT: PROCESSING	3342.6	3171.1	3616.1	4243.9	3946.0	3054.8	3288.4	2931.5	3160.5	4026.7

TABLE 4: FABRICATING — CONSTANT 1986 DOLLARS (MILLIONS)

NET INVESTMENT	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980
FORESTRY	1693.8	1348.3	1109.6	1326.0	1246.9	1356.8	1408.2	1164.5	1306.1	1865.4
MINERALS	419.3	567.0	799.7	740.4	793.6	767.9	710.9	733.3	935.4	724.5
TOTAL INVESTMENT: FABRICATING	2113.1	1915.3	1909.2	2066.3	2040.5	2124.7	2119.0	1897.7	2241.5	2589.9

TABLE 5: TOTAL ACTIVITY — CONSTANT 1986 DOLLARS (MILLIONS)

NET INVESTMENT	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980
AGRICULTURE	3975.3	4629.2	5447.0	5794.2	6223.9	6517.0	6479.6	6979.7	7949.1	7558.8
FORESTRY	2475.9	2220.7	2367.2	2596.4	2244.6	2218.1	2267.9	2126.7	2418.9	3001.7
MINERALS	4799.7	3962.6	3776.8	4113.7	4495.1	4318.4	4490.4	3295.6	3972.2	5399.4
PETROLEUM	3071.8	3203.0	3457.5	3960.6	4374.1	4937.6	5157.4	5532.6	7154.4	9205.8
TOTAL INVESTMENT:TOTAL ACTIVITY	14322.7	14015.7	15048.6	16465.0	17337.7	17991.1	18395.3	17934.6	21494.5	25165.8

TABLE 6: MINERAL SECTOR — CONSTANT 1986 DOLLARS (MILLIONS)

NET INVESTMENT	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980
MINING	3227.3	2406.1	2055.9	1935.7	2240.5	2519.3	2603.2	1720.1	2088.1	3065.3
PROCESSING	1153.1	989.5	921.3	1437.7	1461.0	1031.1	1176.3	842.3	948.8	1609.7
FABRICATING	419.3	567.0	799.7	740.4	793.6	767.9	710.9	733.3	935.4	724.5
TOTAL INVESTMENT: MINERALS	4799.7	3962.6	3776.8	4113.7	4495.1	4318.4	4490.4	3295.6	3972.2	5399.4

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************************************************************************

    1981    1982    1983    1984    1985    1986    1987    AVG.  C.O.V.

  6150.3  4979.8  4451.3  4426.8  3231.6  2892.0  2649.9  4710.1    26.4
   356.5   169.8   168.7   211.3   211.3   211.0   236.0   344.0    35.7
  3762.6  3351.4  2950.1  2696.2  2368.6  1779.2  1966.6  2513.9    22.8
  8898.4  8533.4  7532.0  7765.1  8863.7  5388.1  4655.4  5563.1    42.6
  ------  ------  ------  ------  ------  ------  ------  ------  ------
 19167.8 17034.4 15102.2 15099.5 14675.0 10270.3  9508.0 13131.1    24.9
------------------------------------------------------------------------

    1981    1982    1983    1984    1985    1986    1987    AVG.  C.O.V.

  2414.2  1686.1  1253.9  1392.9  1417.2  1161.2  1345.5  1646.2    26.4
  1348.4  1665.3  1696.2  1303.3   951.4   618.0   621.1   867.7    44.5
  ------  ------  ------  ------  ------  ------  ------  ------  ------
  3762.6  3351.4  2950.1  2696.2  2368.6  1779.2  1966.6  2513.9    22.8
------------------------------------------------------------------------

    1981    1982    1983    1984    1985    1986    1987    AVG.  C.O.V.

  1002.8  1083.5  1045.4  1093.0  1125.4  1103.4  1344.9  1062.5    11.5
   566.7   367.4   314.6   353.9   337.0   430.5   720.7   524.7    25.6
  1712.6  1080.2   588.1   935.1  1427.4  1364.1  1513.6  1187.8    25.3
  1069.2  1404.5   915.9   458.1   345.8   412.6   534.0   721.1    39.0
  ------  ------  ------  ------  ------  ------  ------  ------  ------
  4351.4  3935.6  2863.9  2840.1  3235.5  3310.6  4113.2  3496.0    14.0
------------------------------------------------------------------------

    1981    1982    1983    1984    1985    1986    1987    AVG.  C.O.V.

  2762.2  2128.3  1088.1  1242.0  2096.6  1889.6  2458.9  1617.1    30.1
   831.7   528.3   324.7   380.7   525.0   644.5   513.2   643.5    26.2
  ------  ------  ------  ------  ------  ------  ------  ------  ------
  3593.9  2656.6  1412.8  1622.7  2621.6  2534.1  2972.1  2260.6    22.5
------------------------------------------------------------------------

    1981    1982    1983    1984    1985    1986    1987    AVG.  C.O.V.

  7153.1  6063.3  5496.7  5519.8  4356.9  3995.4  3994.8  5772.6    21.3
  3685.4  2665.4  1571.4  1807.2  2644.9  2531.1  3415.6  2485.8    20.3
  6307.0  4960.0  3862.9  4012.0  4320.9  3787.8  3993.3  4345.2    15.9
  9967.6  9937.9  8447.9  8223.2  9209.4  5800.7  5189.5  6284.2    37.6
  ------  ------  ------  ------  ------  ------  ------  ------  ------
 27113.1 23626.6 19378.9 19562.2 20532.2 16115.0 16593.3 18887.8    19.1
------------------------------------------------------------------------

    1981    1982    1983    1984    1985    1986    1987    AVG.  C.O.V.

  3762.6  3351.4  2950.1  2696.2  2368.6  1779.2  1966.6  2513.9    22.8
  1712.6  1080.2   588.1   935.1  1427.4  1364.1  1513.6  1187.8    25.3
   831.7   528.3   324.7   380.7   525.0   644.5   513.2   643.5    26.2
  ------  ------  ------  ------  ------  ------  ------  ------  ------
  6307.0  4960.0  3862.9  4012.0  4320.9  3787.8  3993.3  4345.2    15.9
------------------------------------------------------------------------
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Employment[11]

The number of employed workers is an important indication of an industry's impact on the economy. The mineral sector is generally seen as a capital intensive industry, contributing more to capital investment and proportionately less to employment. Nonetheless, mining still remains an important source of employment for Canadians. Moreover, employment opportunities in the mineral sector encourage manpower training in science, engineering and technology and other high-skill professions, thereby upgrading Canada's human capital resources. The following employment figures refer to total employees and are expressed in annual terms which have been derived from month-end averages.

The average number of workers employed in the mineral industry in the primary stage of activity (figure 67) almost equalled that of the forestry and petroleum industries combined. All of the following averages refer to the 1963-87 period for minerals and petroleum, and to 1963-84 for forestry (1984 was the latest year for which statistics were available for forestry). The average number of workers employed in mining was 90,000, with most employed in metal mining (60,700) and the rest divided among the other forms of mining (figure 68). Forestry averaged 53,600 workers (1963-1984), and petroleum 39,100 (1963-87). While employment in minerals and forestry showed little variation, petroleum employment more than tripled to 72,350 workers by 1987. However, most of this gain came in the post-1977 period so that the average number of workers employed in petroleum over the entire 1963-87 period remained low. It should be noted that the "services" component of petroleum make up more than 50 percent of total employment in that industry.

At the processing stage (figure 69), forestry employment was slightly ahead of mining, averaging roughly 100,000 workers, while mining employed an average of 82,800 workers. Petroleum averages only 15,800 workers. All three industries cut back their work force in the early eighties, although the forestry industry showed some recovery from 1982-84.

Employment in the fabricating stage of activity is illustrated in figure 70. Forestry, at 119,000 workers, averages a a little over 20,000 workers more than the mineral industry. Employment for both industries at this stage grows throughout the sixties and most of the seventies before tumbling in the eighties. The mineral industry was especially hard-hit, falling 22 percent from 1979 to 1983.

In terms of total activity (figure 71), mining and forestry are almost identical, forestry employing an average of 272,500 workers and minerals 271,000, although these levels have fallen off in recent years as both industries rationalize their operations. Employment in the petroleum industry has more than doubled since 1963, but is still modest compared to forestry and minerals, with 90,225 workers in 1987.

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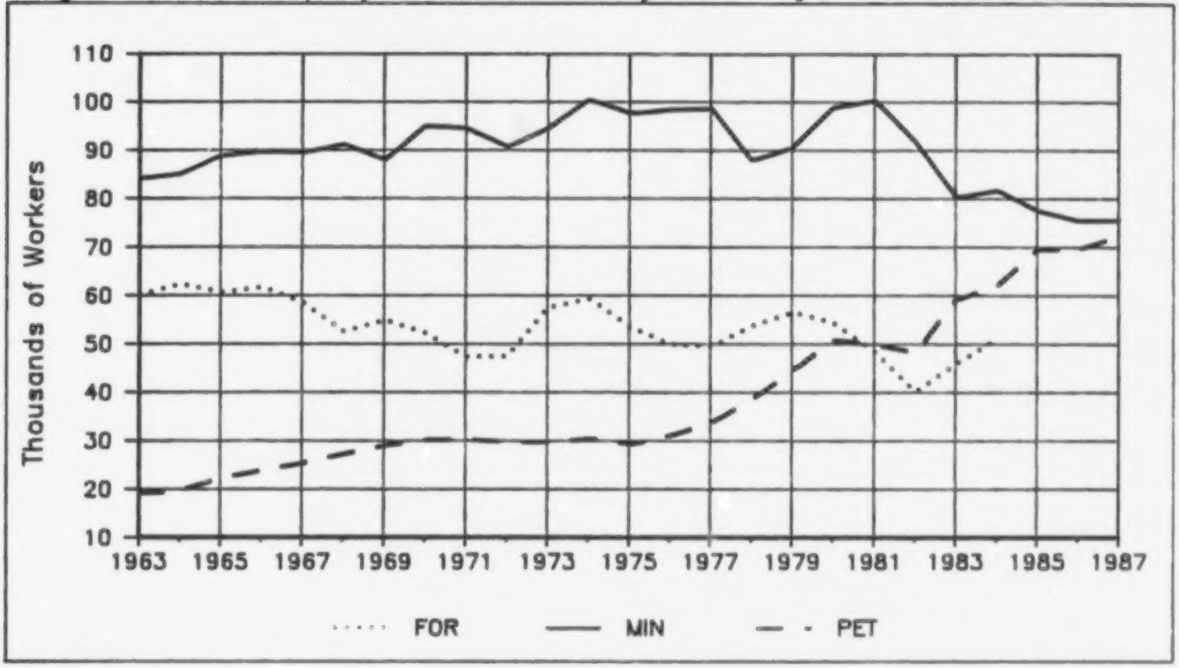
[11] Data from this and the following section on wages was drawn from Statistics Canada's Census of Forestry, Mines, and Manufactures. Unfortunately, data for the primary stage of agriculture was not available and so only the results for the forestry, mineral and petroleum industries are reported in these two sections.

Employment in the mineral sector broken down by stage of activity is shown in figure 72. The fabricating stage has consistently employed the largest number of workers, the only exeptions being 1963 and 1982, when employment was larger in the primary stage of activity.

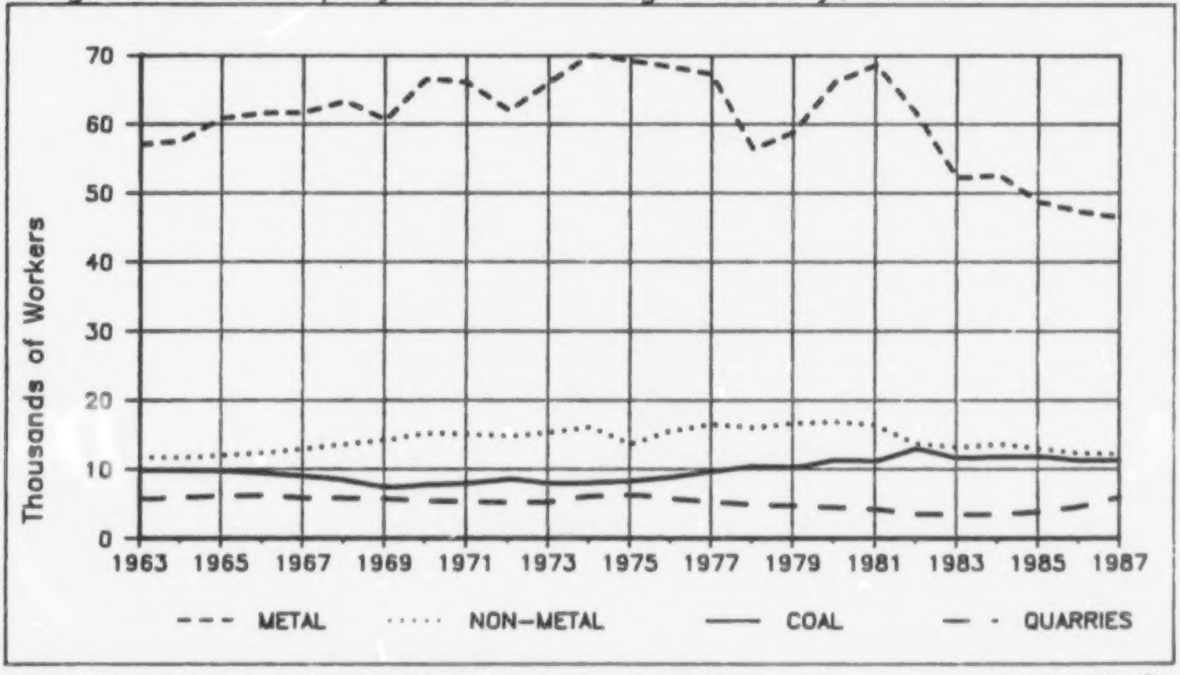
EMPLOYMENT: Primary and Mining Activity

Figure 67. Employment, Primary Activity, Total Workers



(ref: table J1)

Figure 68. Employment, Mining Industry, Total Workers

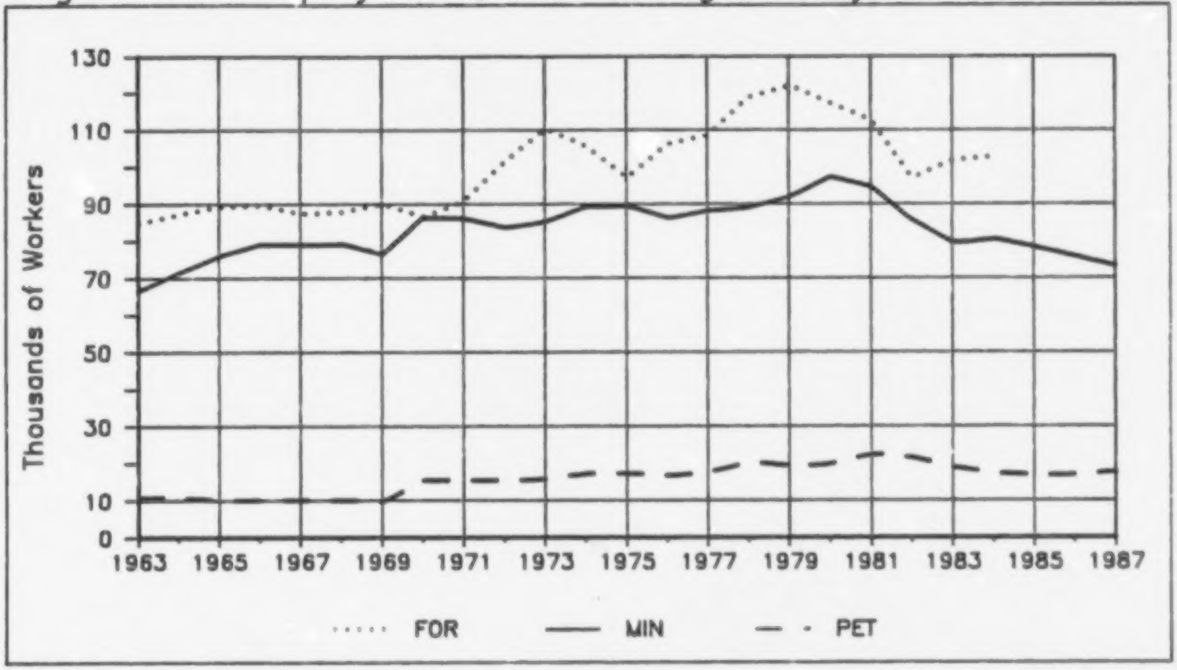


(ref: table J2)

NOTE: Forestry statistics available only up to 1984.
1986 Preliminary; 1987 Forecast.
Source: Statistics Canada, Catalogues 25–202, 26–201, 31–203.

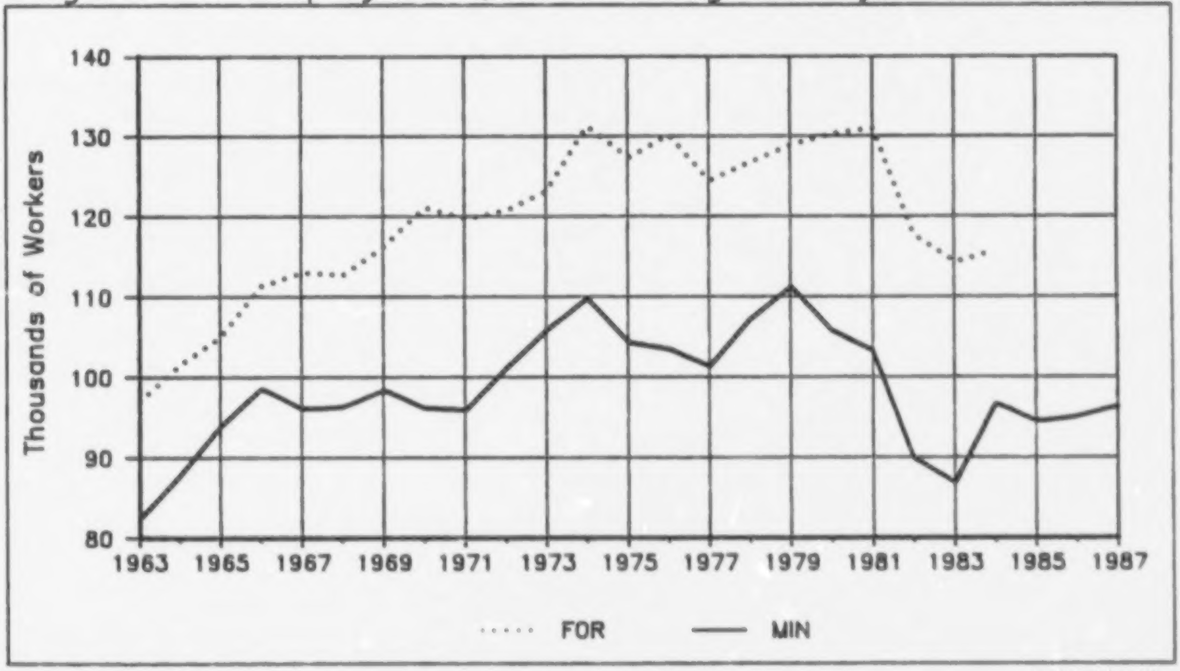
EMPLOYMENT: Processing and Fabricating

Figure 69. Employment, Processing Activity, Total Workers



(ref: table J3)

Figure 70. Employment, Fabricating Activity, Total Workers

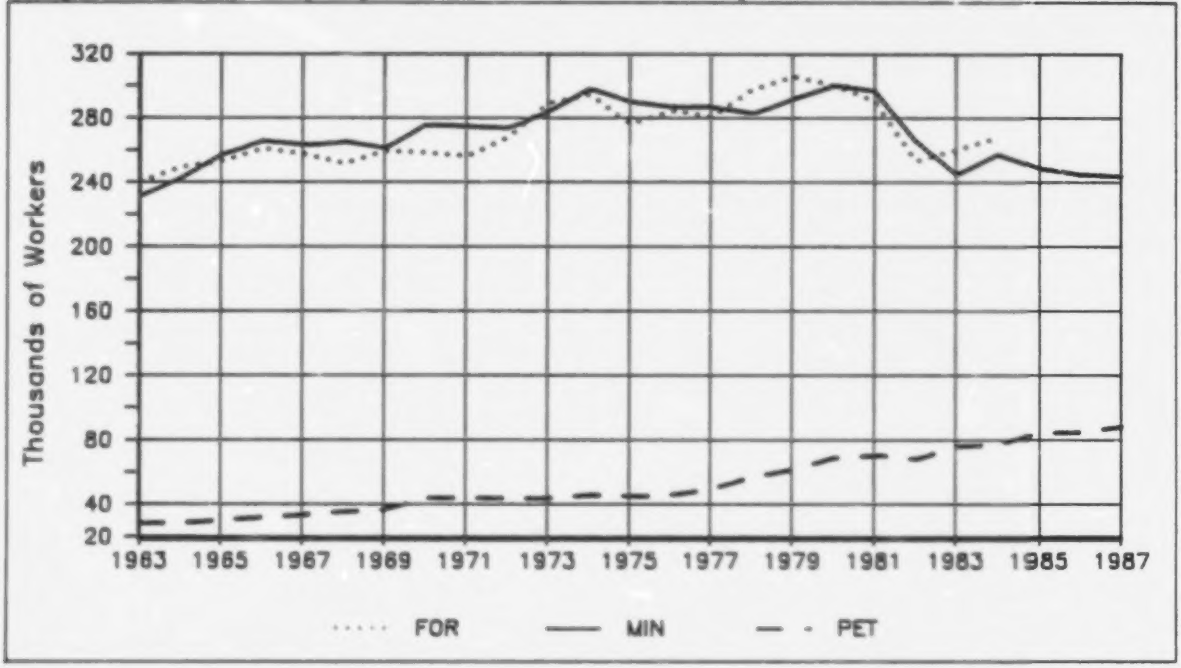


(ref: table J4)

NOTE: Forestry statistics available only up to 1984.
1986 Preliminary; 1987 Forecast.
Source: Statistics Canada, Catalogues 25–202, 26–201, 31–203.

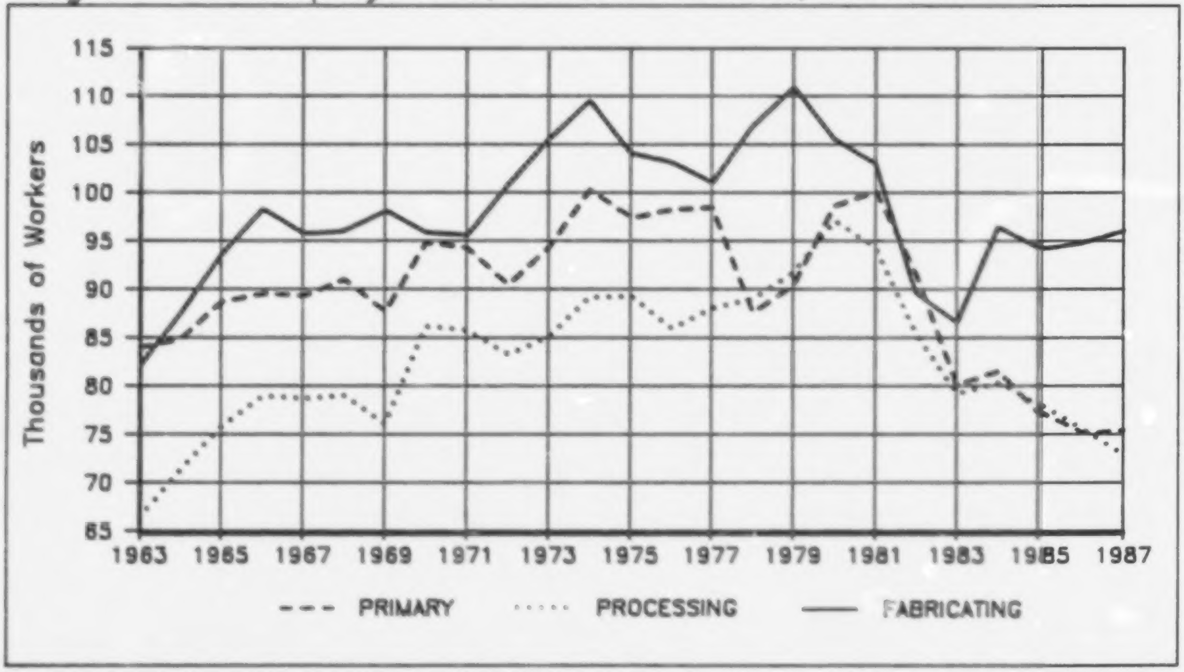
EMPLOYMENT: Total Activity and Mineral Sector

Figure 71. Employment, Total Activity, Total Workers



(ref: table J5)

Figure 72. Employment, Mineral Sector, Total Workers



(ref: table J6)

NOTE: Forestry statistics available only up to 1984.
1986 Preliminary; 1987 Forecast.
Source: Statistics Canada, Catalogues 25–202, 26–201, 31–203.

Table J

TABLE 1: PRIMARY ACTIVITY

TOTAL NUMBER OF WORKERS	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975
FORESTRY	60291	62419	60701	61791	58568	52605	54945	52230	47284	47553	57586	59491	53622
MINING	84294	85215	89003	89822	89565	91305	87935	95124	94514	90718	94657	100575	97662
PETROLEUM	19108	19878	22378	24010	25456	27380	29050	30338	30213	29643	29782	30543	29187
TOTAL	163693	167512	172082	175623	173589	171290	171930	177692	172011	167914	182025	190609	180471

TABLE 2: MINING INDUSTRY

TOTAL NUMBER OF WORKERS	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975
METAL MINES	57119	57648	60942	61670	61728	63369	60550	66590	66012	61994	66134	70038	69161
NON-METAL MINES	11661	11727	12116	12422	13007	13673	14322	15315	15105	14866	15391	16198	13703
COAL MINES	9828	9796	9697	9418	8981	8427	7371	7874	8069	8704	7856	8142	8416
QUARRIES	5686	6044	6248	6312	5779	5836	5692	5345	5328	5154	5276	6197	6382
TOTAL	84294	85215	89003	89822	89495	91305	87935	95124	94514	90718	94657	100575	97662

TABLE 3: PROCESSING

TOTAL NUMBER OF WORKERS	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975
FORESTRY	85009	87393	89455	89716	87522	88024	90200	86652	90829	101441	110322	105603	97110
MINERALS	66712	71658	76109	79236	78967	79344	76330	86467	86046	83587	85404	89502	89580
PETROLEUM	10723	10646	9915	10005	10100	10006	9735	15647	15517	15409	16087	17435	17264
TOTAL	162444	169697	175479	178957	176589	177374	176265	188766	192392	200437	211813	212540	203954

TABLE 4: FABRICATING

TOTAL NUMBER OF WORKERS	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975
FORESTRY	97058	101556	105006	111394	113020	112676	116193	121080	119709	120758	123138	131275	127342
MINERALS	82420	87843	93912	98602	96033	96375	98438	96104	95831	101109	105884	109818	104296
TOTAL	179478	189399	198918	209996	209053	209051	214631	217184	215540	221867	229022	241093	231638

TABLE 5: TOTAL ACTIVITY

TOTAL NUMBER OF WORKERS	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975
FORESTRY	242358	251368	255162	262901	259110	253305	261338	259962	257822	269752	291046	296369	278074
MINERALS	233426	244716	259024	267660	264565	267024	262703	277695	276391	275414	285945	299895	291538
PETROLEUM	29831	30524	32293	34015	35556	37386	38785	45985	45730	45052	45869	47978	46451
TOTAL	505615	526608	546479	564576	559231	557715	562826	583642	579943	590218	622860	644242	616063

TABLE 6: MINERAL SECTOR

TOTAL NUMBER OF WORKERS	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975
PRIMARY	84294	85215	89003	89822	89565	91305	87935	95124	94514	90718	94657	100575	97662
PROCESSING	66712	71658	76109	79236	78967	79344	76330	86467	86046	83587	85404	89502	89580
FABRICATING	82420	87843	93912	98602	96033	96375	98438	96104	95831	101109	105884	109818	104296
TOTAL	233426	244716	259024	267660	264565	267024	262703	277695	276391	275414	285945	299895	291538

```
*********************************************************************************

   1976   1977   1978   1979   1980   1981   1982   1983   1984   1985   1986   1987
   ----   ----   ----   ----   ----   ----   ----   ----   ----   ----   ----   ----
  49878  49445  53753  56614  54370  48402  40156  45943  51173     NA     NA     NA
  98598  98821  87903  90691  98974 100468  91787  80413  81846  77447  75430  75750
  31173  33699  38637  44486  50831  49808  48213  59279  62129  69643  69700  72350

 179649 181965 180293 191791 204175 198678 180156 185635 195148     NA     NA     NA
-------------------------------------------------------------------------------------

   1976   1977   1978   1979   1980   1981   1982   1983   1984   1985   1986   1987
   ----   ----   ----   ----   ----   ----   ----   ----   ----   ----   ----   ----
  68269  67242  56447  58960  66118  68712  61503  52194  52683  48672  47306  46400
  15649  16608  16035  16770  16979  16391  13680  13170  13698  12974  12298  12100
   8995   9781  10574  10269  11416  11182  13113  11646  11905  11860  11150  11250
   5685   5190   4847   4692   4461   4183   3491   3403   3560   3941   4676   6000

  98598  98821  87903  90691  98974 100468  91787  80413  81846  77447  75430  75750
-------------------------------------------------------------------------------------

   1976   1977   1978   1979   1980   1981   1982   1983   1984   1985   1986   1987
   ----   ----   ----   ----   ----   ----   ----   ----   ----   ----   ----   ----
 106172 108660 119004 122048 117307 112570  97050 101965 102941     NA     NA     NA
  86224  88356  89321  92036  97375  94554  85615  79481  80651  78252  75750  73125
  16689  17849  20353  19193  20073  22638  21501  18917  17264  16739  17015  17875

 209085 214865 228678 233277 234755 229762 204166 200363 200856     NA     NA     NA
-------------------------------------------------------------------------------------

   1976   1977   1978   1979   1980   1981   1982   1983   1984   1985   1986   1987
   ----   ----   ----   ----   ----   ----   ----   ----   ----   ----   ----   ----
 130207 124463 126783 128918 130309 131024 117669 114308 115799     NA     NA     NA
 103411 101257 107234 111231 105757 103192  89813  86814  96719  94507  95175  96400

 233618 225720 234017 240149 236066 234216 207482 201122 212518     NA     NA     NA
-------------------------------------------------------------------------------------

   1976   1977   1978   1979   1980   1981   1982   1983   1984   1985   1986   1987
   ----   ----   ----   ----   ----   ----   ----   ----   ----   ----   ----   ----
 286257 282568 299540 307580 301986 291996 254875 262216 269913     NA     NA     NA
 288233 288434 284458 293958 302106 298214 267215 246708 259216 250206 246355 245275
  47862  51548  58990  63679  70904  72446  69714  78196  79393  86382  86715  90225

 622352 622550 642988 665217 674996 662656 591804 587120 608522     NA     NA     NA
-------------------------------------------------------------------------------------

   1976   1977   1978   1979   1980   1981   1982   1983   1984   1985   1986   1987
   ----   ----   ----   ----   ----   ----   ----   ----   ----   ----   ----   ----
  98598  98821  87903  90691  98974 100468  91787  80413  81846  77447  75430  75750
  86224  88356  89321  92036  97375  94554  85615  79481  80651  78252  75750  73125
 103411 101257 107234 111231 105757 103192  89813  86814  96719  94507  95175  96400

 288233 288434 284458 293958 302106 298214 267215 246708 259216 250206 246355 245275
-------------------------------------------------------------------------------------
```

Wages

Wages paid are also important indicators of an industry's relative importance to the economy. Real wages are expressed in terms of constant 1986 dollar amounts, after adjusting for inflation according to the Consumers Price Index.

In the primary stage (figures 73, 74), petroleum pays the highest wages of the three industries, especially since 1980, reaching $747 per week in 1984. Mining comes second, moving ahead of forestry in 1977, closing in 1984 at $650. Mining is the only industry in which real wages have continued to rise to 1984. Petroleum real wages have stabilized in the last year. Forestry has shown consistently falling real wages since 1977, despite showing nominal wage increases in every year except the last. Foresty's nominal wages closed out 1984 at $498.

In the mining industry itself (figures 75, 76), metal mining had paid the highest wages until 1981 when coal mining recorded sharp gains and closed out 1984 at $740 (current $) a week. This compared to metals' $662, non-metals' $565 and quarries' $498.

Fairly steady wage increases, in both real and nominal terms, characterize the processing stage for all industries (figures 77, 78). In nominal wages, petroleum is once again above mining and forestry, with an average weekly wage of $812 in 1984. Mining's 1984 nominal wage was $668 and forestry's was $475. Real wages were almost constant for all three industries in the second half of the 1970s. Only mining showed a slight increase over the years 1976-80. Despite rough times for the resource sectors in general in the 1980s, real wages have shown surprising increases since 1981 for both petroleum and minerals.

Mining and forestry wages move in tandem in the fabricating stage (figures 79, 80), with forestry slightly higher. Both industries show upward trends in real, as well as nominal wages in the sixties and early seventies. With the exception of a short spurt in the 1975-77 period; however, real wages have been almost flat for the rest of the period. In terms of nominal wages, mining wages closed out 1984 at $516 and forestry at $584.

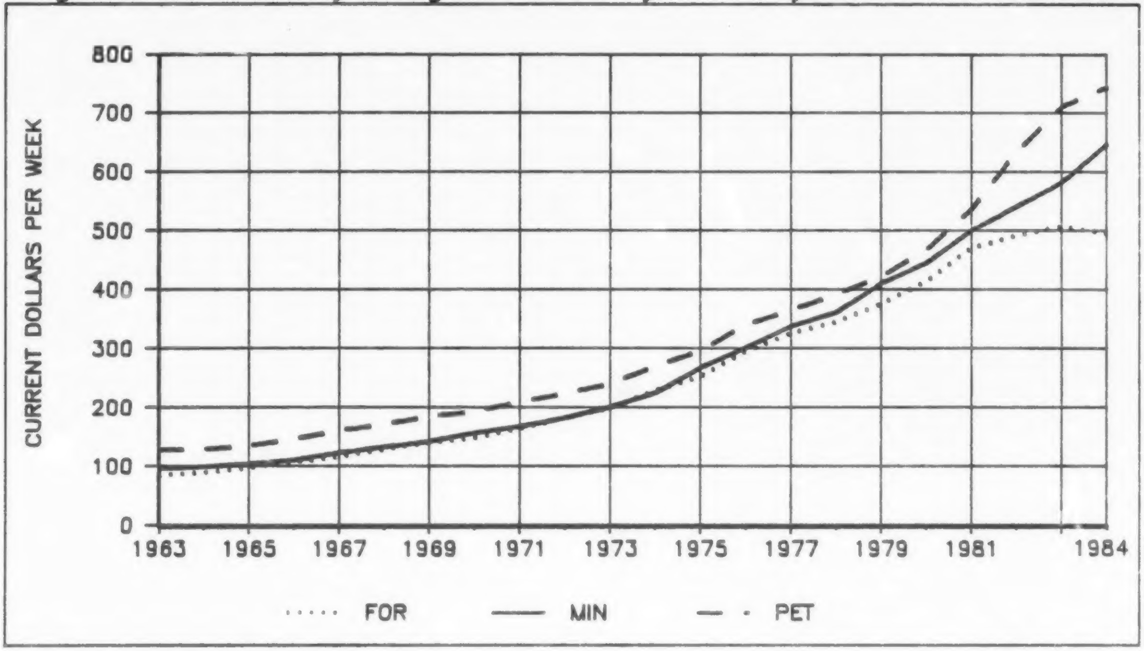
Average wages over all stages are illustrated in figures 81 and 82. Here again petroleum pays the highest wages, with mining second and forestry third. Real and nominal wages show upward trends for all three industries from 1963-77. Since that time, real wages have fallen for forestry, remained steady until 1983 and then increased for minerals. Wages in the petroleum industry fell from 1977 to 1980 before increasing again to 1984.

The three stages of the mineral sector are shown in figures 83 and 84. Primary and processing stages are almost identical, while fabricating is somewhat lower Real wages showed strong gains until 1977, when they stabilized before increasing in 1984.

It should be pointed out that, while petroleum paid slightly higher average wages, the mineral industries total wage bill in any given year was from three to six times that of petroleum, and in every year save one, larger than that of forestry's total wage bill. For example, in 1984 the mineral industry's total wage bill was 7.64 billion dollars, compared to forestry's 7.38 billion and petroleum's 2.15 billion dollars. Over the entire 1963 to 1984 time period, the mineral industry's total wage bill amounted to 83.9 billion dollars in nominal terms or over 169 billion in 1986 dollars. This exceeded forestry's totals of 78.6 billion in nominal terms and 157 billion in 1986 dollars, and far and away exceeded petroleum's 15.8 billion (nominal) and 28.3 (1986) wage bill. Despite its capital intensive nature, the mining industry leads the other resource industries in terms of total wages paid.

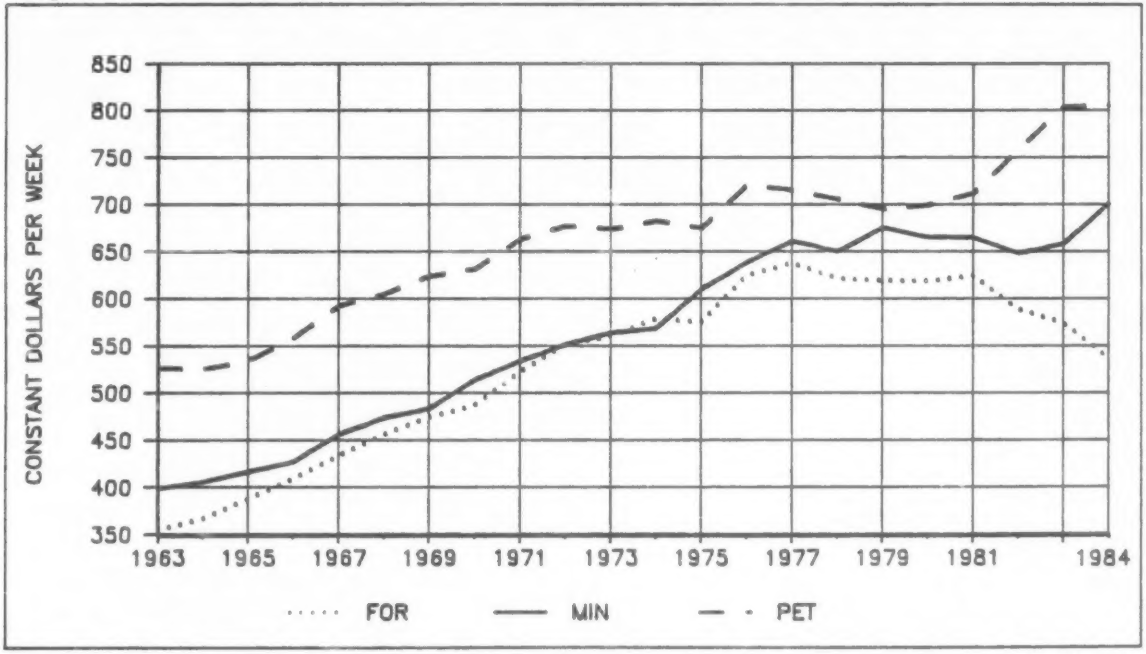
WEEKLY WAGES: Primary Activity

Figure 73. Weekly Wages, Primary Activity, Current Dollars



(ref: table K1)

Figure 74. Weekly Wages, Primary Activity, Constant 1986 Dollars

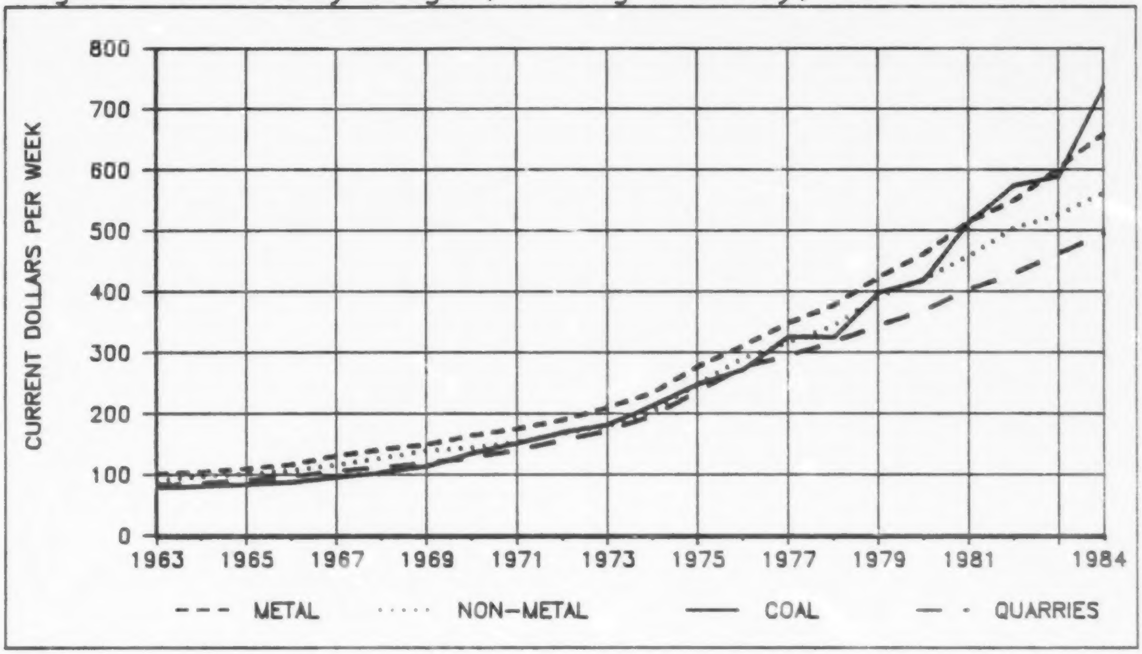


Source: Statistics Canada, Catalogues 25–202, 26–201, 31–203.
The term "wages" includes wages, salaries and overtime payments.
Constant Dollars Derived Using C.P.I. Deflator.

(ref: table L1)

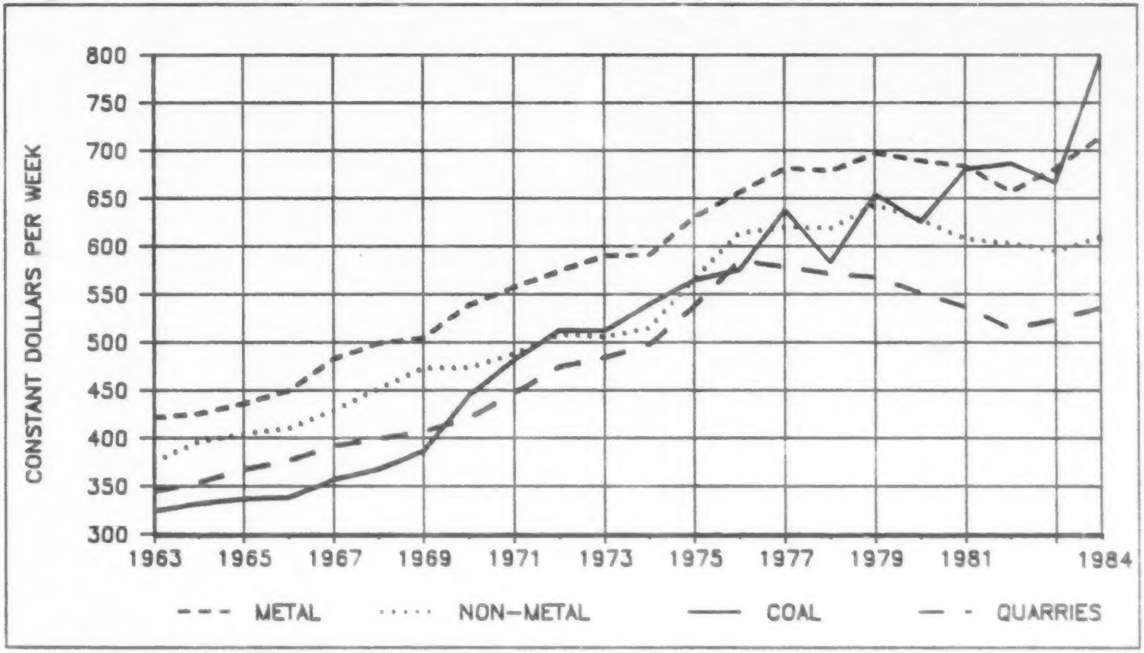
WEEKLY WAGES: Mining Industry

Figure 75. Weekly Wages, Mining Industry, Current Dollars



(ref: table K2)

Figure 76. Weekly Wages, Mining Industry, Constant 1986 Dollars

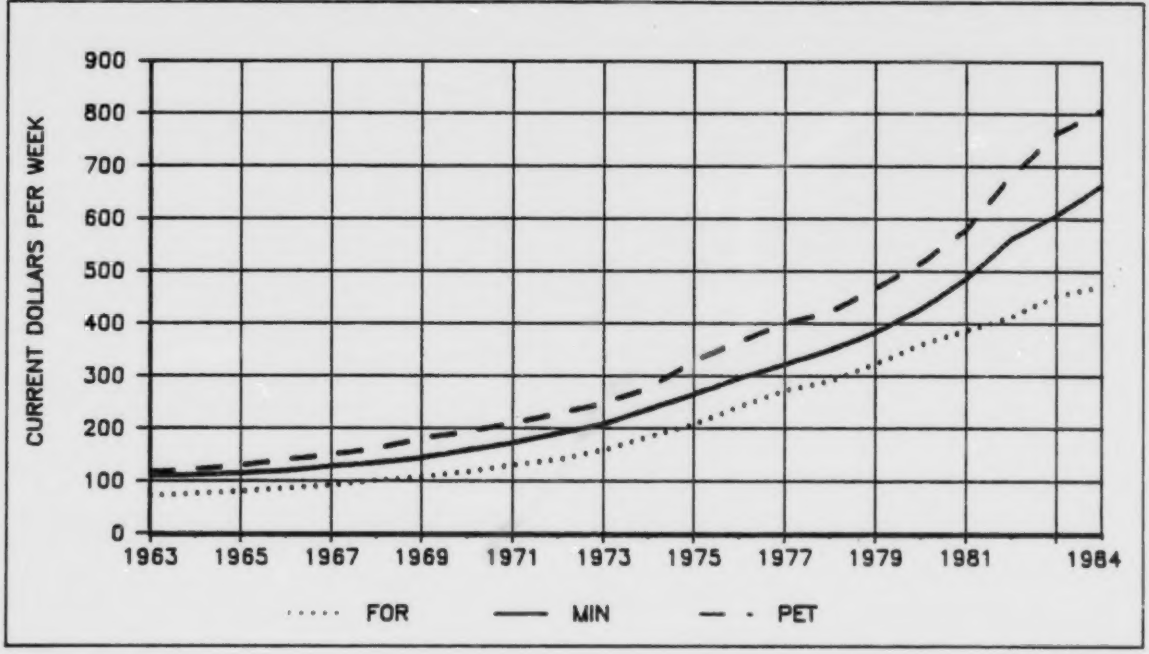


Source: Statistics Canada, Catalogues 25–202, 26–201, 31–203.
The term "wages" includes wages, salaries and overtime payments.
Constant Dollars Derived Using C.P.I. Deflator.

(ref: table L2)

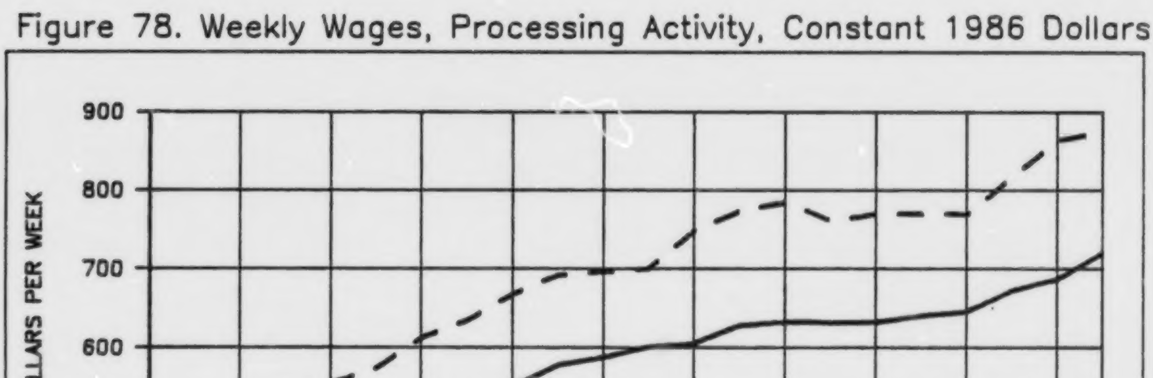
WEEKLY WAGES: Processing Activity

Figure 77. Weekly Wages, Processing Activity, Current Dollars



(ref: table K3)

Figure 78. Weekly Wages, Processing Activity, Constant 1986 Dollars

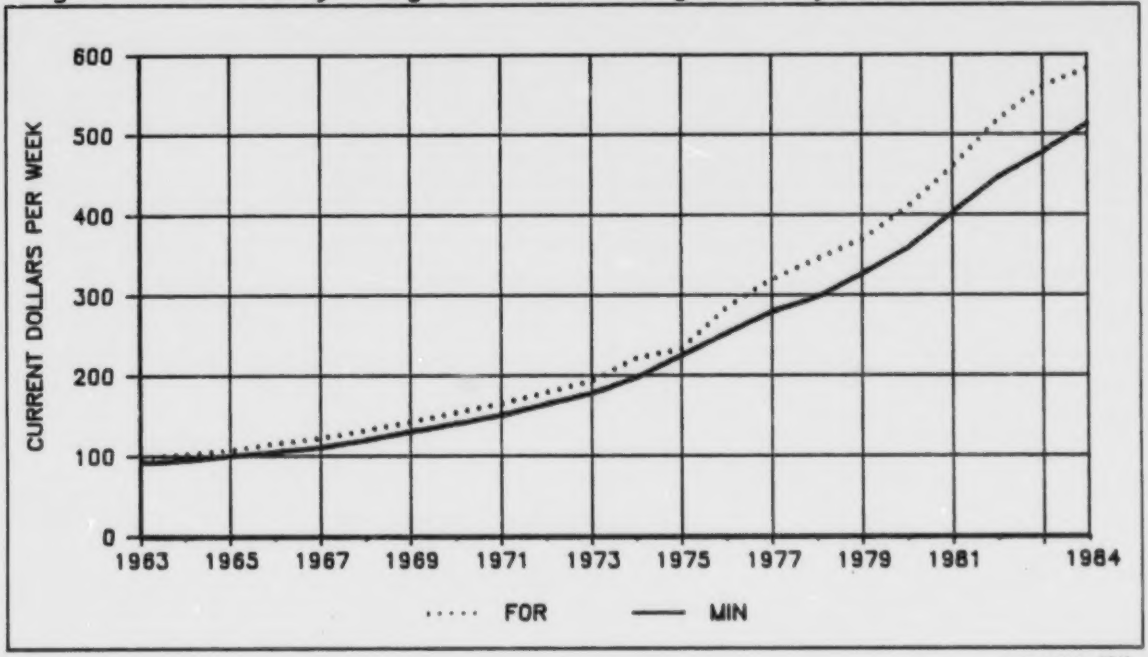


(ref: table L3)

Source: Statistics Canada, Catalogues 25–202, 26–201, 31–203.
The term "wages" includes wages, salaries and overtime payments.
Constant Dollars Derived Using C.P.I. Deflator.

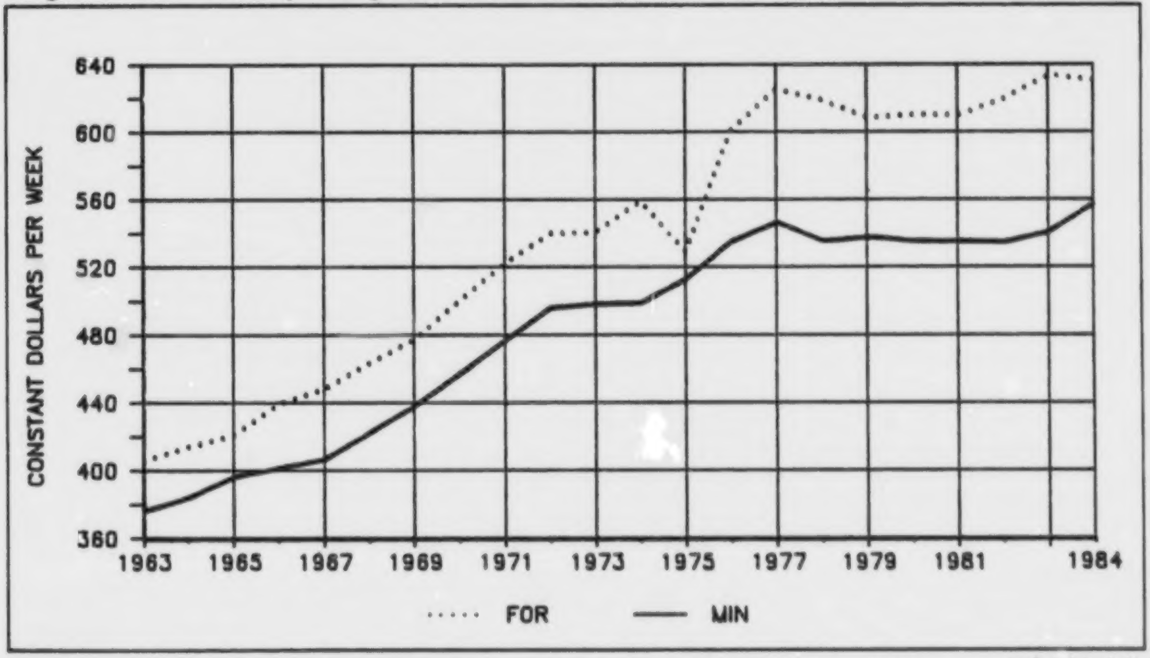
WEEKLY WAGES: Fabricating Activity

Figure 79. Weekly Wages, Fabricating Activity, Current Dollars



(ref: table K4)

Figure 80. Weekly Wages, Fabricating Activity, Constant 1986 Dollars

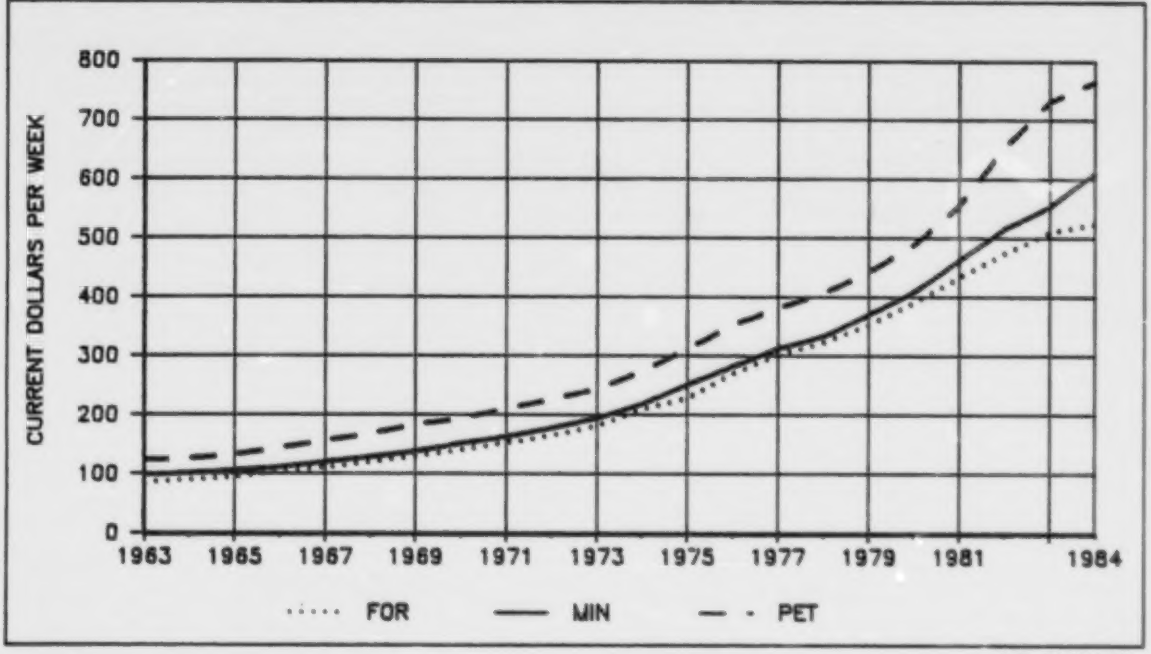


(ref: table L4)

Source: Statistics Canada, Catalogues 25–202, 26–201, 31–203.
The term "wages" includes wages, salaries and overtime payments.
Constant Dollars Derived Using C.P.I. Deflator.

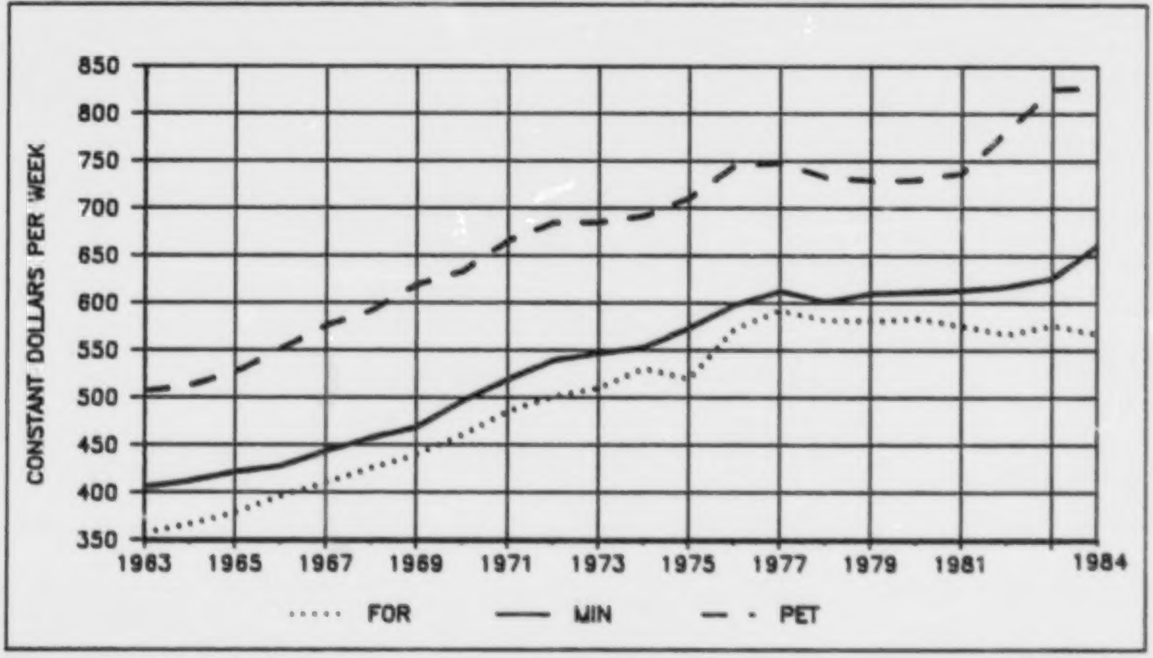
WEEKLY WAGES: Total Activity

Figure 81. Weekly Wages, Total Activity, Current Dollars



(ref: table K5)

Figure 82. Weekly Wages, Total Activity, Constant 1986 Dollars

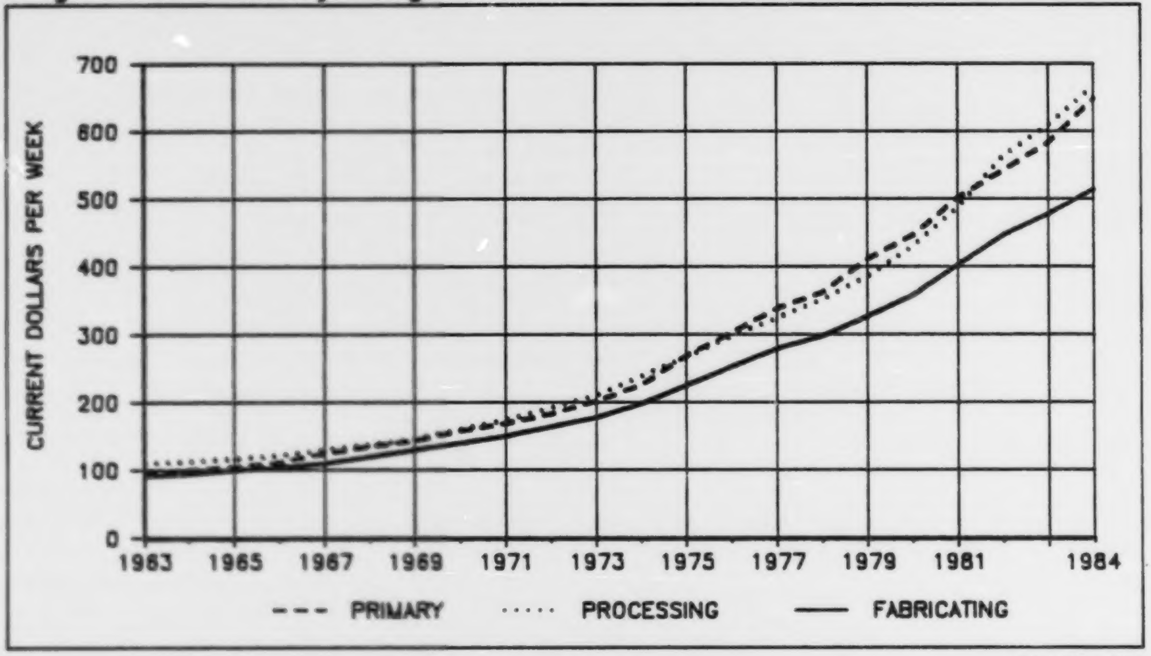


Source: Statistics Canada, Catalogues 25–202, 26–201, 31–203.
The term "wages" includes wages, salaries and overtime payments.
Constant Dollars Derived Using C.P.I. Deflator.

(ref: table L5)

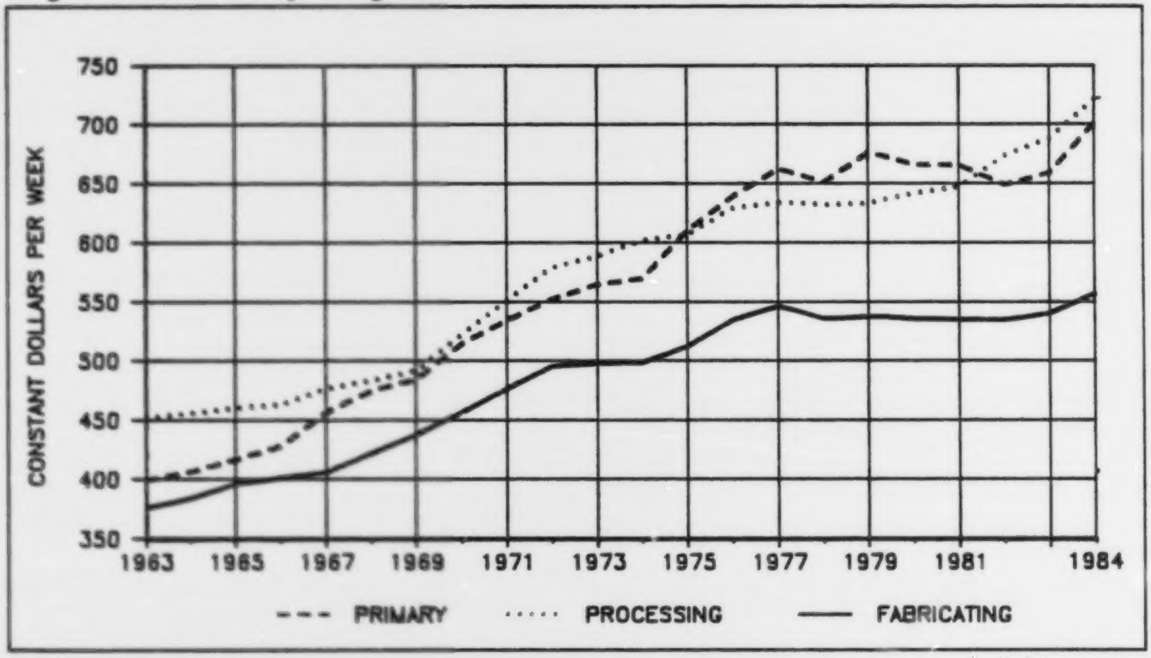
WEEKLY WAGES: Mineral Sector

Figure 83. Weekly Wages, Mineral Sector, Current Dollars



(ref: table K6)

Figure 84. Weekly Wages, Mineral Sector, Constant 1986 Dollars



(ref: table L6)

Source: Statistics Canada, Catalogues 25–202, 26–201, 31–203.
The term "wages" includes wages, salaries and overtime payments.
Constant Dollars Derived Using C.P.I. Deflator.

Table K

TABLE 1: PRIMARY ACTIVITY
AVERAGE WEEKLY WAGES

CURRENT DOLLARS	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973
FORESTRY	87.87	92.51	100.10	109.39	120.19	131.61	142.96	151.60	167.28	185.05	202.30
MINING	98.74	102.33	107.48	114.24	126.43	136.70	145.78	159.95	170.96	185.03	203.72
PETROLEUM	130.09	132.24	137.82	149.14	164.04	174.37	187.85	196.35	212.24	226.91	243.04
AVERAGE: PRIMARY	96.79	100.58	106.92	115.05	127.22	138.26	148.58	160.62	174.02	189.53	207.14

TABLE 2: MINING INDUSTRY
AVERAGE WEEKLY WAGES

CURRENT DOLLARS	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973
METAL MINES	104.41	107.28	112.61	120.10	133.77	144.08	152.21	167.66	178.54	192.51	213.17
NON-METAL MINES	93.05	99.95	104.33	109.83	118.98	130.33	142.65	147.39	156.41	170.43	182.57
COAL MINES	80.27	83.96	87.20	90.68	99.12	106.30	116.72	138.59	154.41	172.06	184.87
QUARRIES	85.38	89.40	94.98	100.82	108.75	115.39	122.85	131.31	143.37	159.16	174.97
AVERAGE: MINING	98.74	102.33	107.48	114.24	126.53	136.70	145.78	159.95	170.96	185.03	203.72

TABLE 3: PROCESSING
AVERAGE WEEKLY WAGES

CURRENT DOLLARS	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973
FORESTRY	75.12	78.73	83.50	89.45	96.06	104.01	111.99	121.09	133.90	144.77	162.32
MINING	111.66	114.72	118.70	123.55	131.91	139.25	148.00	162.33	176.36	193.94	212.33
PETROLEUM	120.12	125.85	133.56	144.77	153.69	165.53	184.41	197.45	213.90	232.18	251.57
AVERAGE: PROCESSING	93.10	96.89	101.60	107.65	115.38	123.24	131.58	146.31	159.34	171.99	189.26

TABLE 4: FABRICATING
AVERAGE WEEKLY WAGES

CURRENT DOLLARS	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973
FORESTRY	100.27	104.20	108.46	117.17	123.99	133.39	143.54	155.35	166.96	180.80	194.96
MINERALS	92.93	96.69	102.18	107.10	112.48	121.68	131.76	141.98	152.47	166.08	179.74
AVERAGE: FABRICATING	96.90	100.72	105.50	112.44	118.70	127.99	138.13	149.44	160.52	174.09	187.92

TABLE 5: TOTAL ACTIVITY
AVERAGE WEEKLY WAGES

CURRENT DOLLARS	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973
FORESTRY	88.36	92.44	97.72	105.88	113.70	122.81	132.53	143.18	155.37	168.00	184.04
MINERALS	100.38	103.93	108.86	114.37	123.00	132.04	141.17	154.47	166.23	180.78	197.41
PETROLEUM	125.22	129.13	135.87	147.19	159.54	170.62	186.45	196.91	213.06	229.45	247.21
AVERAGE: TOTAL ACTIVITY	95.62	99.42	104.65	111.66	120.14	129.42	139.02	151.59	163.88	177.51	193.71

TABLE 6: MINERAL SECTOR
AVERAGE WEEKLY WAGES

CURRENT DOLLARS	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973
MINING	98.74	102.33	107.48	114.24	126.43	136.70	145.78	159.95	170.96	185.03	203.72
PROCESSING	111.66	114.72	118.70	123.55	131.91	139.25	148.00	162.33	176.36	193.94	212.33
FABRICATING	92.93	96.69	102.18	107.10	112.48	121.68	131.76	141.98	152.47	166.08	179.74
AVERAGE: MINERAL SECTOR	100.38	103.93	108.86	114.37	123.00	132.04	141.17	154.47	166.23	180.78	197.41

```
******************************************************************************

 1974    1975    1976    1977    1978    1979    1980    1981    1982    1983    1984

231.91  255.22  298.10  328.31  347.98  378.80  416.86  473.54  494.41  510.15  497.63
227.99  270.63  304.59  340.61  364.35  413.49  448.14  503.81  544.36  585.17  650.29
273.26  299.21  343.44  367.91  395.11  425.07  471.54  539.76  636.90  714.18  758.28

233.91  268.80  307.08  340.28  363.12  403.72  442.29  501.39  550.03  590.58  625.03
----------------------------------------------------------------------------------


 1974    1975    1976    1977    1978    1979    1980    1981    1982    1983    1984

236.83  279.85  313.34  350.93  380.19  426.63  464.25  517.96  552.11  605.66  662.45
206.43  251.09  292.94  319.25  346.63  393.77  423.27  460.68  506.64  528.79  565.38
216.40  250.88  274.64  328.72  326.95  400.53  421.71  516.39  577.20  591.91  739.78
199.62  238.81  278.96  297.71  320.05  347.13  371.70  406.87  432.14  465.90  497.62

227.99  270.63  304.59  340.61  364.35  413.49  448.14  503.81  544.36  585.17  650.29
----------------------------------------------------------------------------------


 1974    1975    1976    1977    1978    1979    1980    1981    1982    1983    1984

187.80  211.17  245.02  275.72  294.21  326.84  363.37  390.60  416.61  457.66  474.72
240.84  268.96  299.80  326.17  353.86  387.30  432.34  490.15  565.58  611.12  668.49
280.76  331.99  369.10  404.14  426.19  471.36  519.57  583.14  686.38  767.08  811.86

217.76  246.78  277.52  307.13  329.26  362.58  405.33  450.53  507.49  547.75  581.50
----------------------------------------------------------------------------------


 1974    1975    1976    1977    1978    1979    1980    1981    1982    1983    1984

223.52  234.54  286.21  321.41  346.12  371.63  410.83  461.70  519.69  562.02  583.85
199.59  227.32  254.94  281.13  299.65  328.77  360.30  405.05  448.65  480.09  516.38

212.62  231.29  272.37  303.34  324.83  351.78  388.19  436.74  488.94  526.65  556.86
----------------------------------------------------------------------------------


 1974    1975    1976    1977    1978    1979    1980    1981    1982    1983    1984

212.48  230.37  273.01  305.05  325.83  355.18  393.48  436.25  476.46  512.35  525.88
221.43  254.62  285.34  315.30  336.66  373.23  412.30  465.30  518.99  556.55  613.28
276.93  315.23  355.41  384.89  410.03  445.38  491.83  558.85  656.90  733.30  767.61

220.35  247.01  283.66  314.90  336.45  369.52  409.38  459.58  512.90  552.38  586.16
----------------------------------------------------------------------------------


 1974    1975    1976    1977    1978    1979    1980    1981    1982    1983    1984

227.99  270.63  304.59  340.61  364.35  413.49  448.14  503.81  544.36  585.17  650.29
240.84  268.96  299.80  326.17  353.86  387.30  432.34  490.15  565.58  611.12  668.49
199.59  227.32  254.94  281.13  299.65  328.77  360.30  405.05  448.65  480.09  516.38

221.43  254.62  285.34  315.30  336.66  373.23  412.30  465.30  518.99  556.55  613.28
```

Table L

TABLE 1: PRIMARY ACTIVITY
AVERAGE WEEKLY WAGES

CONSTANT 1986 DOLLARS	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973
FORESTRY	$356.32	$368.35	$389.20	$410.82	$435.30	$457.86	$476.05	$488.81	$524.03	$553.48	$561.84
MINING	$400.41	$407.45	$417.89	$429.05	$457.91	$475.58	$485.44	$515.73	$535.57	$553.42	$565.78
PETROLEUM	$527.52	$526.57	$535.87	$560.13	$594.14	$606.61	$625.53	$633.10	$664.87	$678.69	$675.00
AVERAGE: PRIMARY	$392.52	$400.52	$415.74	$432.07	$460.78	$480.98	$494.78	$517.89	$545.14	$566.87	$575.29

TABLE 2: MINING INDUSTRY
AVERAGE WEEKLY WAGES

CONSTANT 1986 DOLLARS	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973
METAL MINES	$423.39	$427.20	$437.85	$451.06	$484.50	$501.25	$506.86	$540.59	$559.31	$575.78	$592.04
NON-METAL MINES	$377.35	$397.99	$405.66	$412.47	$430.93	$453.43	$475.04	$475.26	$489.99	$509.74	$507.05
COAL MINES	$325.53	$334.32	$339.04	$340.55	$358.99	$369.83	$388.68	$446.87	$483.73	$514.61	$513.44
QUARRIES	$346.24	$355.99	$369.32	$378.64	$393.87	$401.45	$409.09	$423.39	$449.14	$476.03	$485.95
AVERAGE: MINING	$400.41	$407.45	$417.89	$429.05	$458.27	$475.58	$485.44	$515.73	$535.57	$553.42	$565.78

TABLE 3: PROCESSING
AVERAGE WEEKLY WAGES

CONSTANT 1986 DOLLARS	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973
FORESTRY	$304.61	$313.51	$324.67	$335.96	$347.92	$361.84	$372.93	$390.44	$419.48	$432.99	$450.81
MINING	$452.82	$456.83	$461.55	$464.03	$477.75	$484.44	$492.83	$523.41	$552.47	$580.07	$589.70
PETROLEUM	$487.10	$501.12	$519.30	$543.72	$556.66	$575.86	$614.07	$636.65	$670.09	$694.43	$698.68
AVERAGE: PROCESSING	$377.53	$385.80	$395.03	$404.28	$417.91	$428.75	$438.17	$471.76	$499.17	$514.43	$525.64

TABLE 4: FABRICATING
AVERAGE WEEKLY WAGES

CONSTANT 1986 DOLLARS	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973
FORESTRY	$406.61	$414.93	$421.71	$440.04	$449.08	$464.07	$477.97	$500.91	$523.04	$540.75	$541.45
MINERALS	$376.84	$385.00	$397.31	$402.25	$407.41	$423.31	$438.75	$457.81	$477.63	$496.75	$499.20
AVERAGE: FABRICATING	$392.94	$401.04	$410.19	$422.29	$429.94	$445.28	$459.98	$481.84	$502.85	$520.70	$521.92

TABLE 5: TOTAL ACTIVITY
AVERAGE WEEKLY WAGES

CONSTANT 1986 DOLLARS	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973
FORESTRY	$358.32	$368.10	$379.96	$397.65	$411.79	$427.25	$441.31	$461.66	$486.73	$502.47	$511.13
MINERALS	$407.07	$413.85	$423.26	$429.53	$445.50	$459.34	$470.09	$498.08	$520.74	$540.70	$548.27
PETROLEUM	$507.79	$514.19	$528.31	$552.80	$577.83	$593.58	$620.86	$634.92	$667.45	$686.27	$686.59
AVERAGE: TOTAL ACTIVITY	$387.78	$395.89	$406.90	$419.37	$435.15	$450.23	$462.94	$488.79	$513.39	$530.91	$538.00

TABLE 6: MINERAL SECTOR
AVERAGE WEEKLY WAGES

CONSTANT 1986 DOLLARS	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973
PRIMARY	$400.41	$407.45	$417.89	$429.05	$457.91	$475.58	$485.44	$515.73	$535.57	$553.42	$565.78
PROCESSING	$452.82	$456.83	$461.55	$464.03	$477.75	$484.44	$492.83	$523.41	$552.47	$580.07	$589.70
FABRICATING	$376.84	$385.00	$397.31	$402.25	$407.41	$423.31	$438.75	$457.81	$477.63	$496.75	$499.20
AVERAGE: MINERAL SECTOR	$407.07	$413.85	$423.26	$429.53	$445.50	$459.34	$470.09	$498.08	$520.74	$540.70	$548.27

1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	AVERAGE	C.O.V.
$580.64	$576.76	$626.54	$639.22	$622.50	$620.54	$619.89	$626.02	$589.90	$575.44	$537.92	$528.97	16.93
$570.84	$611.59	$640.17	$663.16	$651.78	$677.36	$666.42	$666.04	$649.49	$660.06	$702.93	$563.82	17.52
$684.17	$676.16	$721.82	$716.32	$706.82	$696.34	$701.21	$713.56	$759.91	$805.58	$807.16	$664.41	11.95
$585.66	$607.44	$645.42	$662.52	$649.58	$661.35	$657.71	$662.84	$656.26	$666.16	$675.62	$564.23	17.15

1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	AVERAGE	C.O.V.
$592.97	$632.41	$658.56	$683.26	$680.12	$698.90	$690.37	$684.74	$658.74	$683.18	$716.08	$585.42	16.66
$516.87	$567.41	$615.68	$621.57	$620.09	$645.07	$629.43	$609.02	$604.50	$596.46	$611.15	$526.01	16.48
$541.83	$566.96	$577.23	$640.01	$584.88	$656.13	$627.10	$682.66	$688.69	$667.66	$799.67	$520.38	26.53
$499.80	$539.66	$586.31	$579.63	$572.54	$568.65	$552.75	$537.88	$515.60	$525.52	$537.90	$477.52	16.43
$570.84	$611.59	$640.17	$663.16	$651.78	$677.36	$666.42	$666.04	$649.49	$660.06	$702.93	$563.84	17.51

1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	AVERAGE	C.O.V.
$470.22	$477.22	$514.98	$536.82	$526.32	$535.41	$540.35	$516.37	$497.07	$516.23	$513.14	$440.88	18.40
$603.00	$607.80	$630.10	$635.04	$633.02	$634.47	$642.91	$647.97	$674.81	$689.33	$722.60	$575.32	14.45
$702.95	$750.25	$775.75	$786.85	$762.42	$772.17	$772.64	$770.91	$818.95	$865.26	$877.58	$688.79	16.83
$545.23	$557.68	$583.27	$597.98	$589.01	$593.97	$602.76	$595.61	$605.50	$617.85	$628.57	$517.09	16.44

1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	AVERAGE	C.O.V.
$559.65	$530.02	$601.54	$625.77	$619.18	$608.79	$610.93	$610.37	$620.07	$633.95	$631.11	$537.82	14.47
$499.74	$513.70	$535.82	$547.35	$536.04	$538.58	$535.78	$535.48	$535.30	$541.54	$558.18	$483.63	12.35
$532.36	$522.67	$572.45	$590.59	$581.08	$576.27	$577.26	$577.38	$583.38	$594.06	$601.94	$513.56	13.62

1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	AVERAGE	C.O.V.
$532.00	$520.60	$573.79	$593.92	$582.88	$581.84	$585.13	$576.73	$568.48	$577.92	$568.45	$500.37	15.86
$554.40	$575.40	$599.72	$613.89	$602.26	$611.42	$613.11	$615.13	$619.23	$627.78	$662.93	$538.71	14.88
$693.37	$712.38	$746.97	$749.37	$733.51	$729.61	$731.39	$738.81	$783.77	$827.16	$829.74	$674.85	13.99
$551.72	$558.21	$596.19	$613.10	$601.88	$605.33	$608.77	$607.57	$611.96	$623.08	$633.61	$529.12	15.56

1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	AVERAGE	C.O.V.
$570.84	$611.59	$640.17	$663.16	$651.78	$677.36	$666.42	$666.04	$649.49	$660.06	$702.93	$563.82	17.52
$603.00	$607.80	$630.10	$635.04	$633.02	$634.47	$642.91	$647.97	$674.81	$689.33	$722.60	$575.32	14.45
$499.74	$513.70	$535.82	$547.35	$536.04	$538.58	$535.78	$535.48	$535.30	$541.54	$558.18	$483.63	12.35
$554.40	$575.40	$599.72	$613.89	$602.26	$611.42	$613.11	$615.13	$619.23	$627.78	$662.93	$538.71	14.88

4. THE FINANCIAL DATA

The following sections analyze financial aspects of the four resource industries. A number of profitability statistics are examined, including before- and after-tax profits, income tax volumes and rates, and returns to assets and equity. These statistics are also measured in both pre-tax and post-tax form. Finally, the debt-to-equity ratio of each industry is calculated. The term "after tax" is defined as net profit before tax less provisions for current and deferred income taxes and mining and logging taxes. The reader is referred to Appendix A for a more detailed explanation of the terms used in this section. All of the financial statistics presented here are based on corporate tax returns. This includes incorporated businesses only and hence the primary stage of the agriculture industry, with a significant proportion of activity carried out by unincorporated enterprises, may be underrepresented.

Total Profit Volumes

The first financial statistic to be examined is that of total profit volumes. Total profit volumes will, of course, depend on and reflect industry size. Other financial variables, such as the rate of return ratios and the debt-to-equity ratios examined later do take account of the size of the industry. However, total profit volumes are also important because they give a better indication of the industry's impact on the economy, both in terms of size of the pool of funds available for re-investment or dispersion to shareholders and the wealth-generating strength of the industry.

Figures 85 through 88 show profit volumes for the primary stage of activity. Figures 85 and 86 show before tax profits in current and constant (1986) dollar terms respectively. Figures 87 and 88 show the same for after tax profits. Constant dollar figures were once again derived by using the GNE deflator.

As can be seen in figure 85, mining was the most profitable industry until 1975 when it was surpassed by the petroleum sector. From 1975 through to 1980 these two industries demonstrated very strong profit growth rates. Since that time, however, mining profits have plummeted, with losses incurred in 1982 and again in 1984. Petroleum, after dipping only slightly in 1981, resumed its strong upward trend and reached nearly 9.3 billion dollars in 1984. Forestry and agriculture earned profits well below these levels. Forestry's profits ranged from an historic low of 8.4 million dollars in 1975, to a peak of 264 million in 1980. It closed 1984 at a level of 67.7 million dollars. Agriculture showed steady, if less dramatic growth, rising from 15.1 million dollars in 1965 to 309 million in 1984.

The same numbers expressed in constant 1986 dollars are shown in figure 86. The same trends are evident, although the growth rates are somewhat less pronounced. Average profits per year in constant 1986 dollars for the entire 1965-84 period are 2.50 billion for mining, 3.94 billion for petroleum, 260 million for agriculture and 113 million for forestry. While mining's overall profits are second only to that of petroleum for the period as a whole, it fares less well when examined chronologically.

In order to attain a clearer picture of how industry profits have evolved, the overall time series was split into two separate periods. The first runs from 1965 to 1974, and the second from 1975 to 1984. The average constant dollar profits for each sub-period were then calculated, and the percentage change between them (using the first period as the base) computed to give an indication of how the profit picture has changed. In this manner, any distortions which could be caused by comparing any two years in isolation are avoided. Note that this operation was used only for the constant dollar series. Any nominal series would favor the latter period because of the inflationary bias in the numbers for the most recent years.

The change between these two periods is 129 percent for agriculture, 413 percent for petroleum and 52.7 percent for forestry. The change for mining was negative 1.6 percent, falling from 2.52 billion in the first period to 2.48 billion in the second. This brings into sharp focus the negative effects of the recession on the mineral industry. The change for all industries combined was 49.7 percent.

Profits after tax are illustrated in figure 87. Here again the patterns established in pre-tax profits can be seen. The numbers are, of course, lower in post-tax form. Petroleum seems to be the industry most affected by taxes. In 1981 for example, post-tax figures show petroleum dropping almost to the same level as profit volumes in mining. In the pre-tax numbers, petroleum was almost three billion dollars above mining. As in the pre-tax figures for petroleum, the post-tax figures show that its 1980 profit volume was not surpassed in 1984.

Constant dollar post-tax volumes (figure 88) show that petroleum's real profits peaked in 1980 at 5.13 billion (1986) dollars. Mining's profits show more severe oscillations in real terms although the same peaks and troughs are present. The percentage change between the pre- and post-1975 periods show that mining's after-tax constant dollar profits actually fell by over 10 percent. This is in sharp contrast to the other three industries which all recorded three-digit rises. The rates for agriculture, forestry and petroleum are 133 percent, 111 percent, and 224 percent respectively. The percentage change for the total economy was 61 percent.

The breakdown for the mining industry is presented in figures 89 through 92. It is clear that the pattern of profits for the mining industry as a whole is primarily established by metal mining. The cyclical nature of the industry is evident with peaks in 1970, 1974 and again in 1980. The severity of the 1981-82 recession is shown in the steep decline metal profits took over that time.

The increasing amplitude of the cycles in metal mining is best illustrated in the pre- and post-tax constant dollar series. While an upward trend (at least through to 1980) was evident in nominal profits, no trend is apparent in the constant dollar series. Metal mining is responsible for the fall in after-tax profits for the mining industry as a whole. Metal mining's average after-tax constant dollar profits fell over 24 percent from the first decade to the second, while all other categories of mining had positive changes.

Processing activity profits are graphed in figures 93 to 96. Mineral industry profits on a current dollar pre-tax basis show a flat trend over the 1965-84 period, actually closing out 1984 52 million dollars below profit levels attained in 1965. The late seventies were the most prosperous times for minerals with a peak in 1980 of 1.3 billion dollars. Forestry followed much the same cyclical patterns as minerals, only at a lower level. Both industries incurred losses for the first time in 1982. Agriculture showed the most stable growth, rising steadily from 455 million dollars in 1965 to just over two billion dollars in 1984. Petroleum earned the highest profits overall, reaching 3.3 billion in 1980.

The constant dollar series show discouraging trends for all resource industries, the mineral sector in particular. In constant dollar pre-tax form (figure 94), mineral profits have not equaled their 1965 levels in any year since then and have shown a steady downward trend over the past two decades. Even in the height of the boom in the late seventies, mineral profits failed to climb above two billion in real (1986) terms. This compares to forestry, with average profit levels of around 450 million dollars, and agriculture which had remarkably stable real profits of two billion dollars throughout the period. Only petroleum has managed to gain ground over this time. It gained strength until 1980-83, when it began to fall back. While the statistics are not yet available, the recovery in 1984 would appear to have been short lived.

The post-tax numbers are graphed in figures 95 and 96. No major differences from the pre-tax trends is apparent except that agricultural profits in real terms rise slightly over time, rather than remaining flat. Percentage changes between the two sub-periods show modest gains for all resources save minerals, which fell over 30 percent in both pre- and post-tax terms. Petroleum was the only industry to keep up with the growth of the total economy average of 61 percent.

The fabricating stages, illustrated in figures 97 to 100, is dominated by the substantial profits earned by forestry in 1973-74 and again in the late seventies. The mineral industry's profits, by contrast, show very stable and moderate gains over the twenty years. Note that mineral fabricating remained profitable in the 1982-83 recession, while forestry recorded losses.

In constant dollar terms, pre-tax profits were healthy during the seventies for the mineral fabricating industry and quite stable overall. The forestry industry's profits were highly variable during the seventies. It is hard to discern a trend over the two decades for forestry. The downward path seen in the second half of the sixties was interrupted by the huge gains recorded in the seventies, followed by the losses of the eighties.

After-tax profits were not markedly different in terms of the overall patterns. Mineral fabricating profits show slightly stronger upward trends expressed in either current or constant dollars. The huge gains for forestry were not eradicated by taxes and are still very prominent in the post-tax figures. Percentage changes (between the pre- and post-1975 periods) for both industries were positive in this stage, with forestry growing by 19 percent and minerals by 24 percent, but this was less than half the total industries' average of 61 percent.

Profits for total activity are shown in figures 101 to 104. For the first decade under consideration (1965-1974), the mineral industry earned the largest profits of the four resource groups. The second decade (1975-1984) was dominated by the petroleum sector. Minerals and forestry parallel each other closely over the entire period but profits for the mineral industry are at higher levels. This would suggest that the two industries are subject to much the same influences and disturbances.

Pre-tax profits in constant dollars (figure 102) illustrate that while the mineral industry retains its relative position, the overall trend in profits is not encouraging. The substantial profits recorded in the early and late seventies have since given way to losses or modest earnings. In fact the long-run trend for all resource industries, save petroleum (which has since suffered), is flat or falling. Percentage changes (from 1965-74 to 1975-84) were just over 10 percent for both agriculture and forestry, 230 percent for petroleum and -10.3 percent for mining. This compares to the economy-wide average of 50 percent.

Post-tax profits are shown in figures 103 and 104. Profits in the petroleum sector in the early eighties have been significantly reduced by taxes. For example, in 1984 pre-tax profits were just under 12 billion dollars, while post-tax profits fell by over 50 percent to under five billion. Forestry shows a stronger recovery in 1984 in post-tax profits, widening the gap between it and the mineral industry. The percentage changes (as defined above) for post-tax constant dollar profits were 29 percent for agriculture, 25 percent for forestry, 137 percent for petroleum and -13 percent for minerals.

The volatility of profits can be seen by examining the coefficient of variation of constant dollar profits (shown together with average profits) in the table below. The growing severity of the cycles in the mineral sector is especially highlighted when the coefficient of variation is looked at in pre- and post-1975 periods. The volatility of mineral profits increased by over 200 percent, while forestry showed a 33 percent increase in its coefficient of variation. The volatility of agricultural and petroleum profits actually fell.

The profits for the three stages of activity in the mineral sector are highlighted in figures 105 to 108. The majority of the profits in the mineral sector have been generated in the primary or mining stage of activity, especially during the seventies. The two constant dollar series show processing profits shrinking over the twenty-year period, while fabricating profits have remained fairly consistent at about the 500-million dollar range. With the huge swings in the mining stage, it is difficult to establish any long-term trend.

Table I

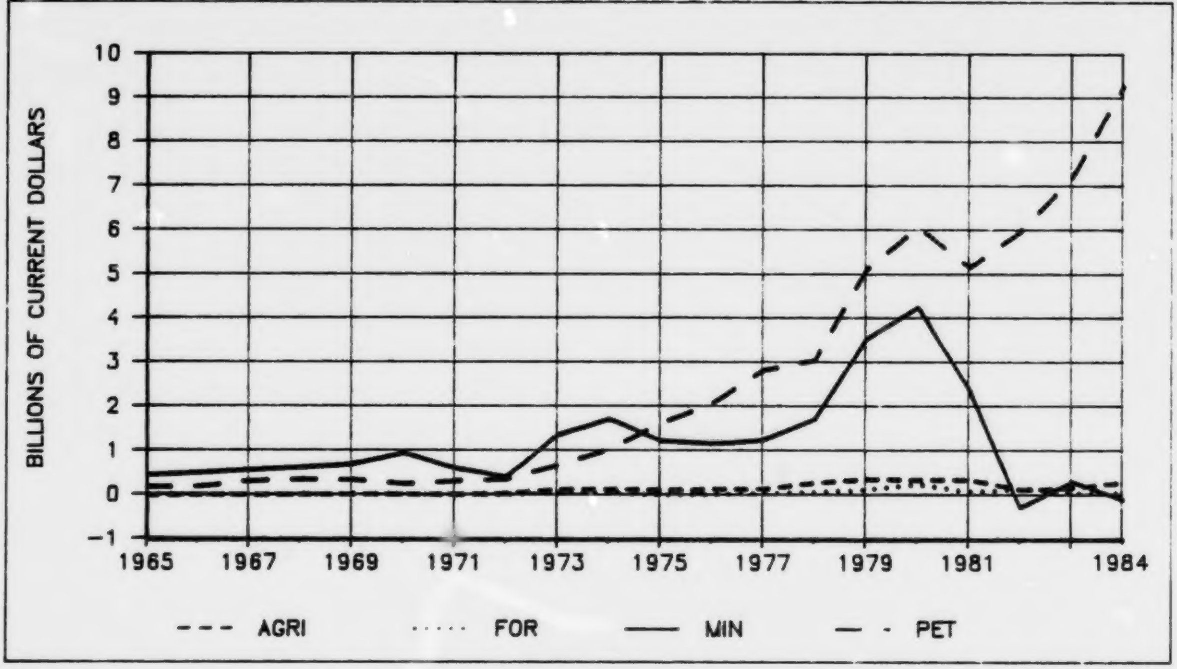
PROFIT STATISTICS: TOTAL ACTIVITY
(millions of constant 1986 dollars)

	Average				Coefficient of Variant		
Sector	1965-84	1965-74	1975-84	% Change	1965-84	1965-74	1975-84
Agriculture	2292.8	2149.7	2435.9	13.3	12.8	13.8	8.4
	(1444.3)	(1261.1)	(1627.5)	(29.1)	(19.3)	(19.4)	(10.5)
Forestry	2001.2	1901.7	2100.7	10.5	65.1	54.4	72.3
	(1279.1)	(1138.9)	(1420.5)	(24.7)	(64.4)	(61.6)	(64.0)
Minerals	4271.8	4504.0	4039.5	-10.3	50.6	24.0	70.3
	(2871.2)	(3065.7)	(2676.8)	(-12.7)	(47.2)	(21.1)	(66.7)
Petroleum	6190.1	2882.6	9497.6	229.5	61.5	47.6	24.0
	(3462.9)	(2055.8)	(4870.0)	(136.9)	(54.4)	(33.5)	(33.5)
Total Resources	14755.9	11438.0	18073.8	58.0	39.3	29.5	32.2
	(9058.1)	(7521.4)	(10594.8)	(40.9)	(39.9)	(26.4)	(39.5)
All Industries	45374.6	36350.0	54399.2	49.7	30.6	23.4	22.4
	(31287.3)	(24016.0)	(38558.6)	(60.6)	(32.1)	(22.3)	(21.3)

Note: Bracketed numbers represent after tax figures.

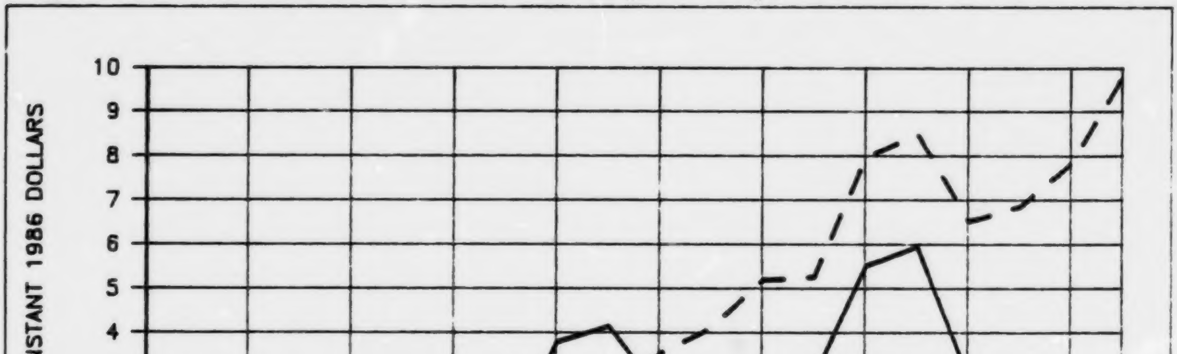
PROFITS BEFORE TAX: Primary Activity

Figure 85. Profits Before Tax, Primary Activity, Current Dollars



(ref: table M1)

Figure 86. Profits Before Tax, Primary Activity, Constant 1986 Dollars

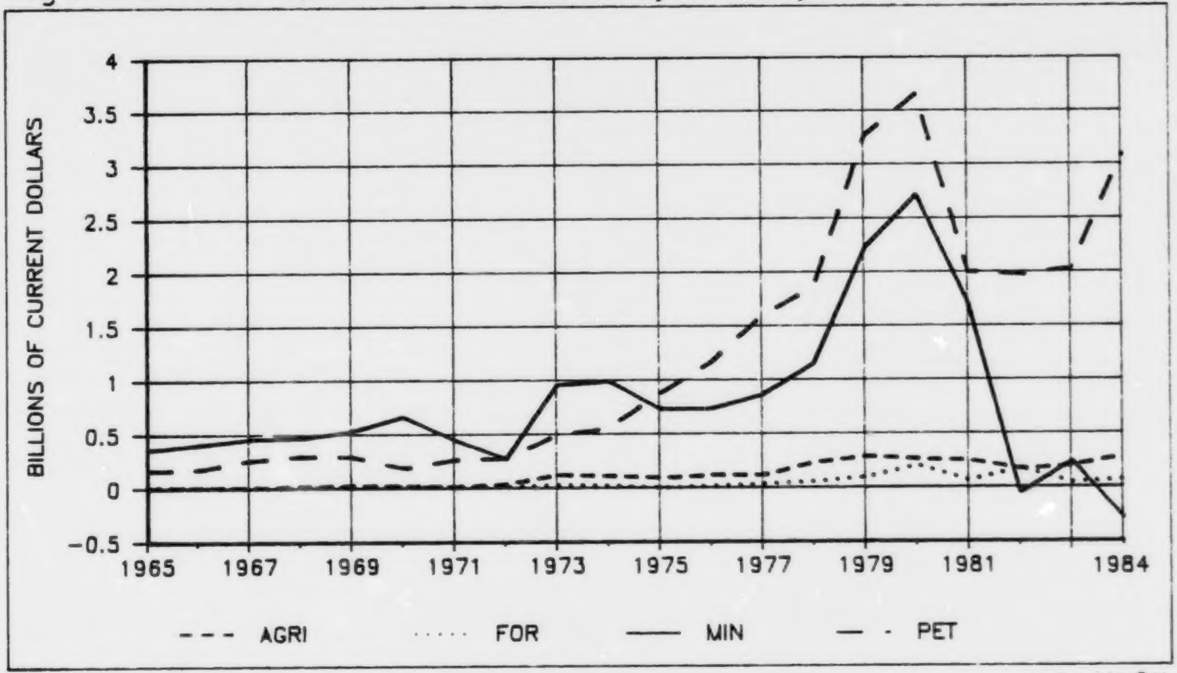


(ref: table N1)

Source: Statistics Canada, Catalogue 61–207.
Constant Dollars Derived Using G.N.E. Deflator

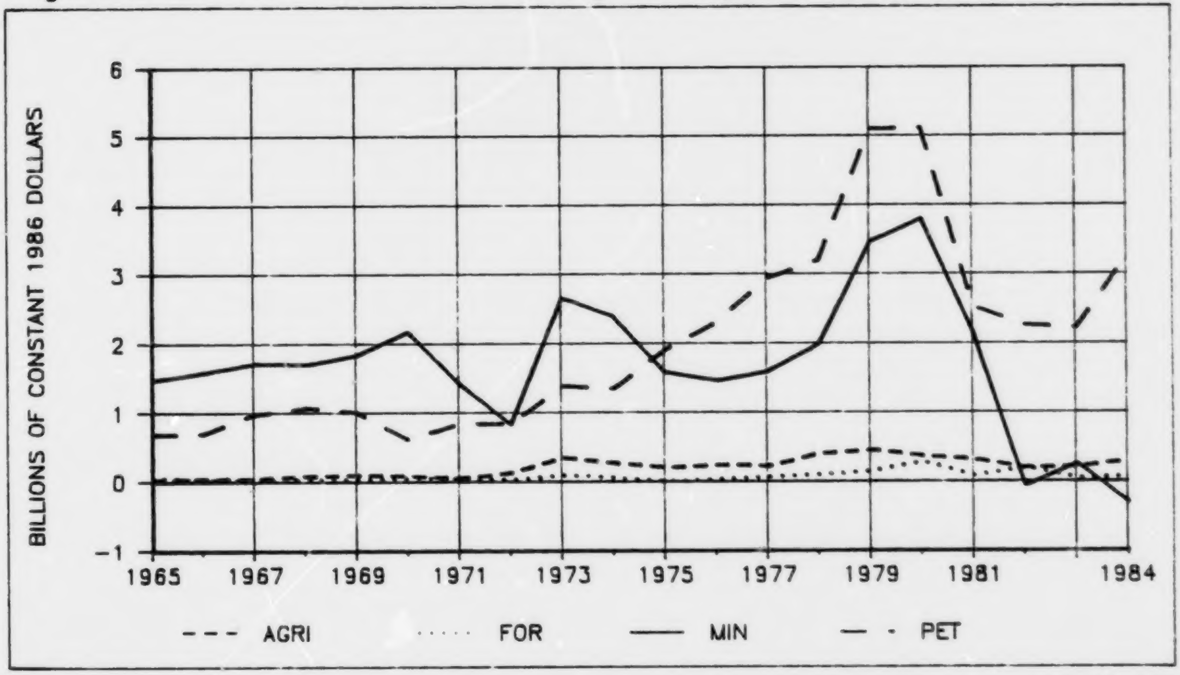
PROFITS AFTER TAX: Primary Activity

Figure 87. Profits After Tax, Primary Activity, Current Dollars



(ref: table O1)

Figure 88. Profits After Tax, Primary Activity, Constant 1986 Dollars

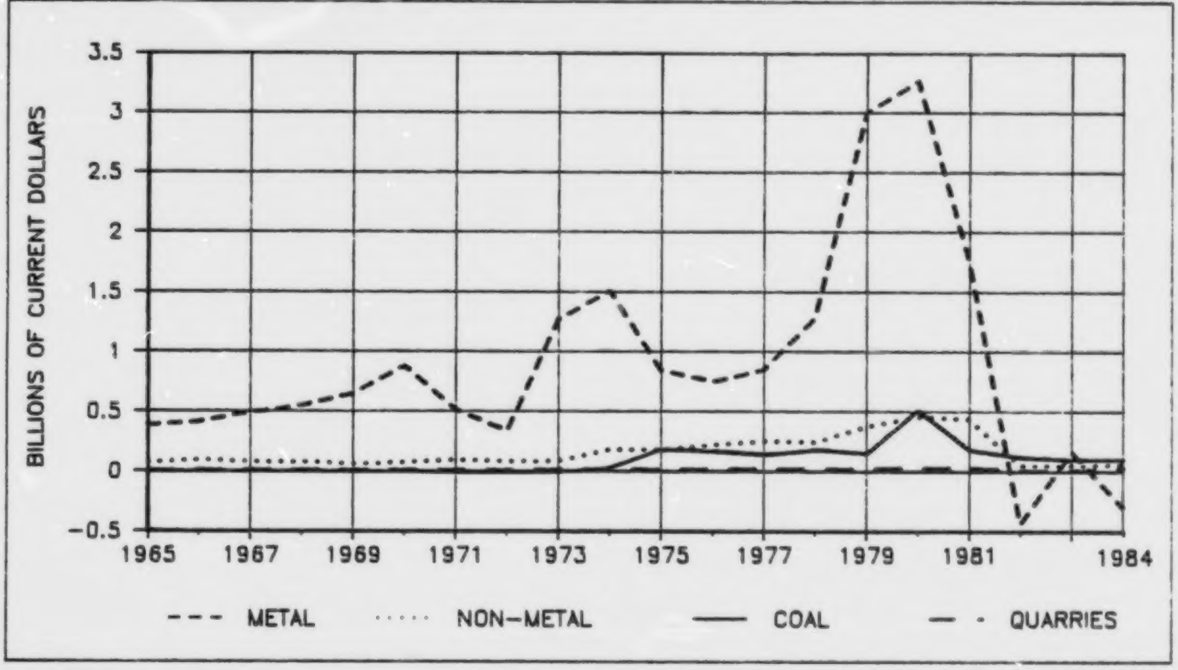


(ref: table P1)

Source: Statistics Canada, Catalogue 61–207.
Constant Dollars Derived Using G.N.E. Deflator

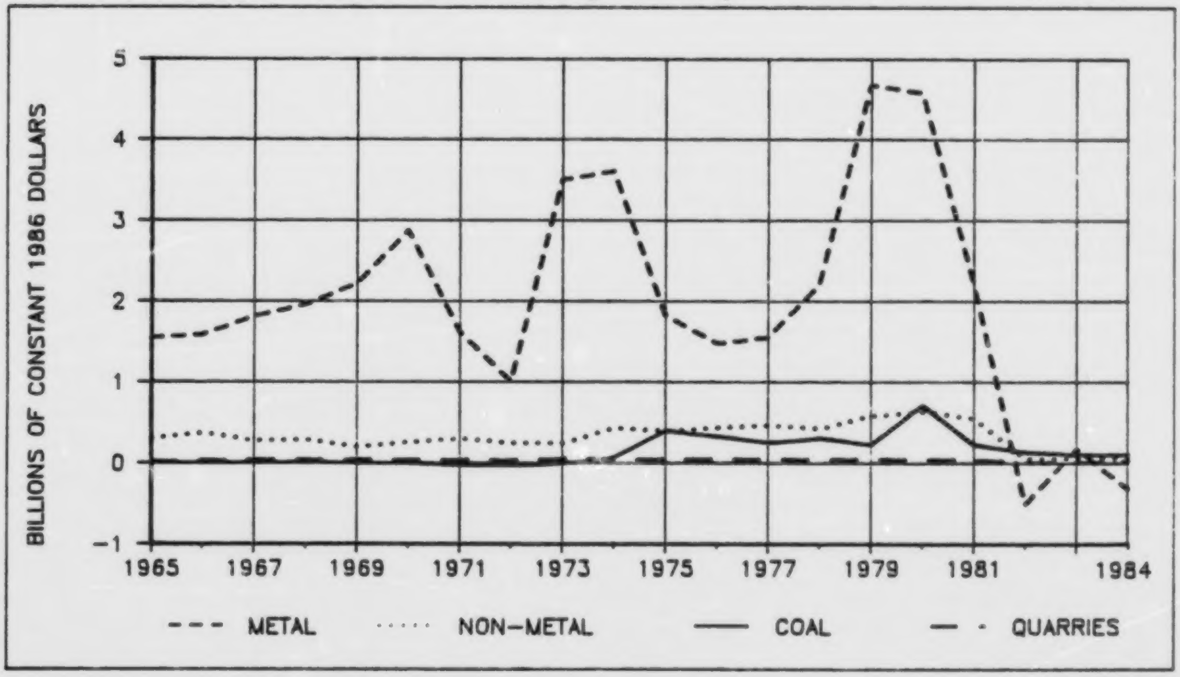
PROFITS BEFORE TAX: Mining Industry

Figure 89. Profits Before Tax, Mining Industry, Current Dollars



(ref: table M2)

Figure 90. Profits Before Tax, Mining Industry, Constant 1986 Dollars

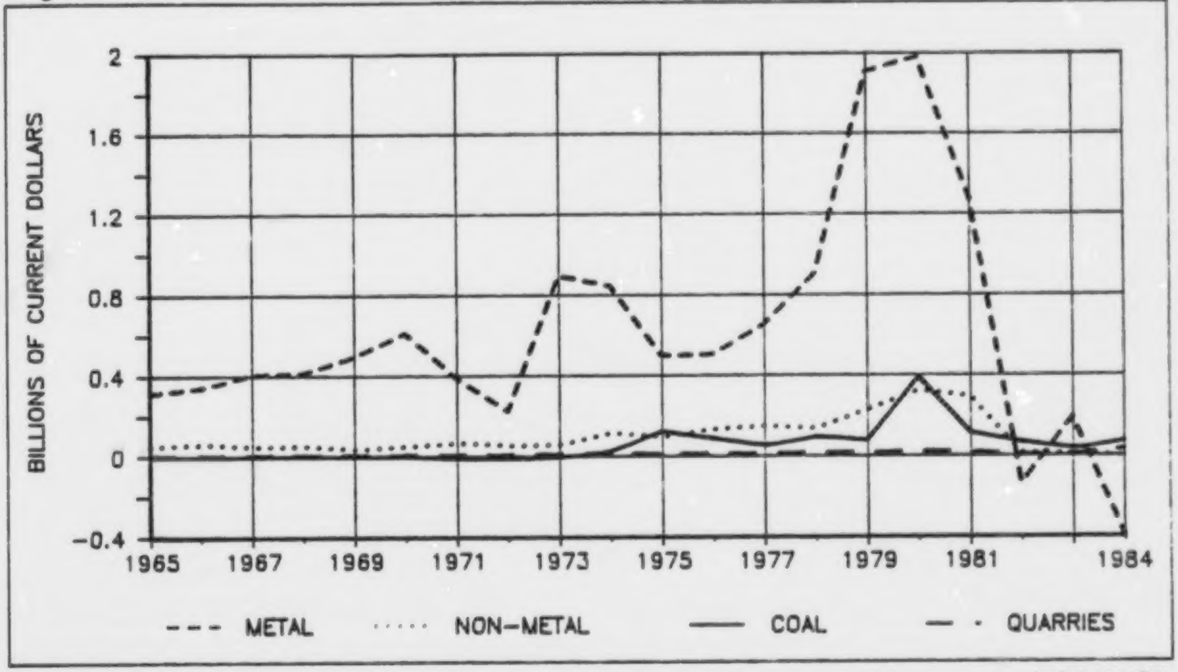


(ref: table N2)

Source: Statistics Canada, Catalogue 61−207.
Constant Dollars Derived Using G.N.E. Deflator

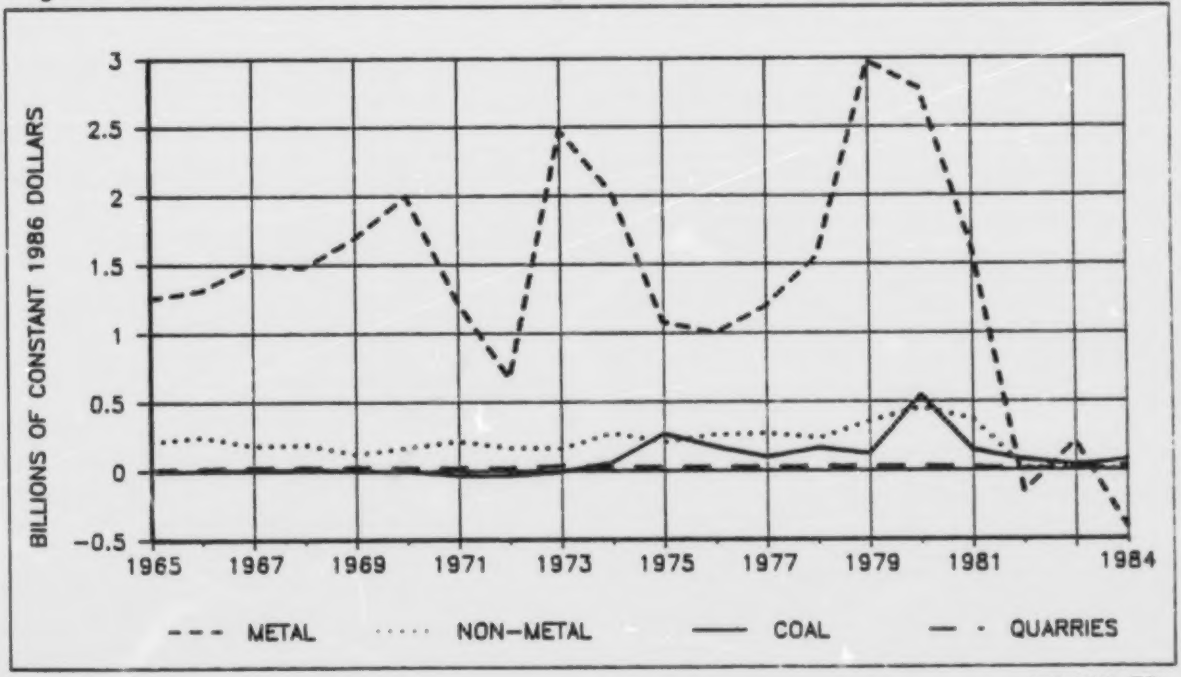
PROFITS AFTER TAX: Mining Industry

Figure 91. Profits After Tax, Mining Industry, Current Dollars



(ref: table O2)

Figure 92. Profits After Tax, Mining Industry, Constant 1986 Dollars

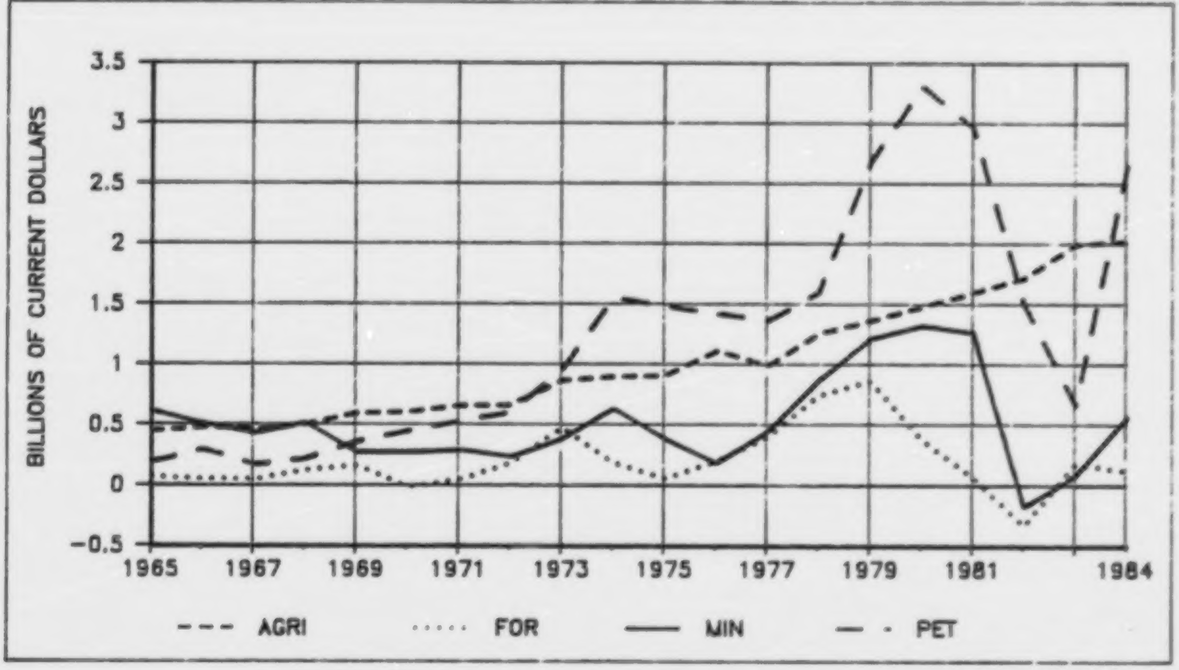


(ref: table P2)

Source: Statistics Canada, Catalogue 61-207.
Constant Dollars Derived Using G.N.E. Deflator

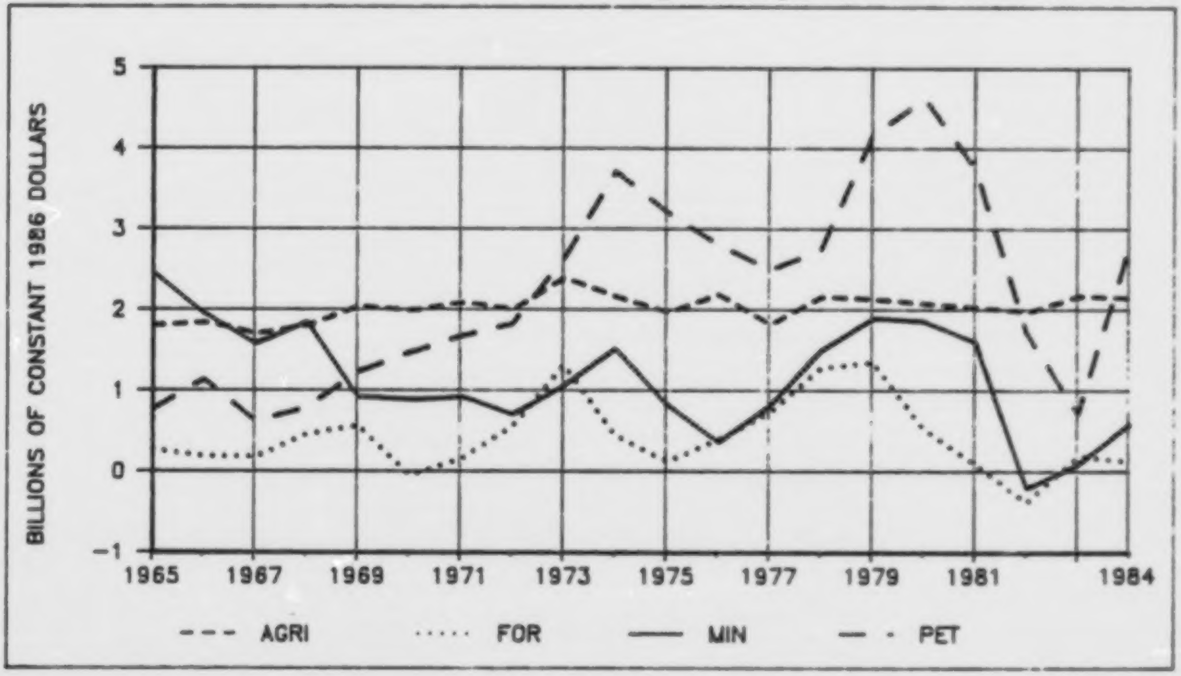
PROFITS BEFORE TAX: Processing Activity

Figure 93. Profits Before Tax, Processing Activity, Current Dollars



(ref: table M3)

Figure 94. Profits Before Tax, Processing Activity, Constant 1986 Dollars

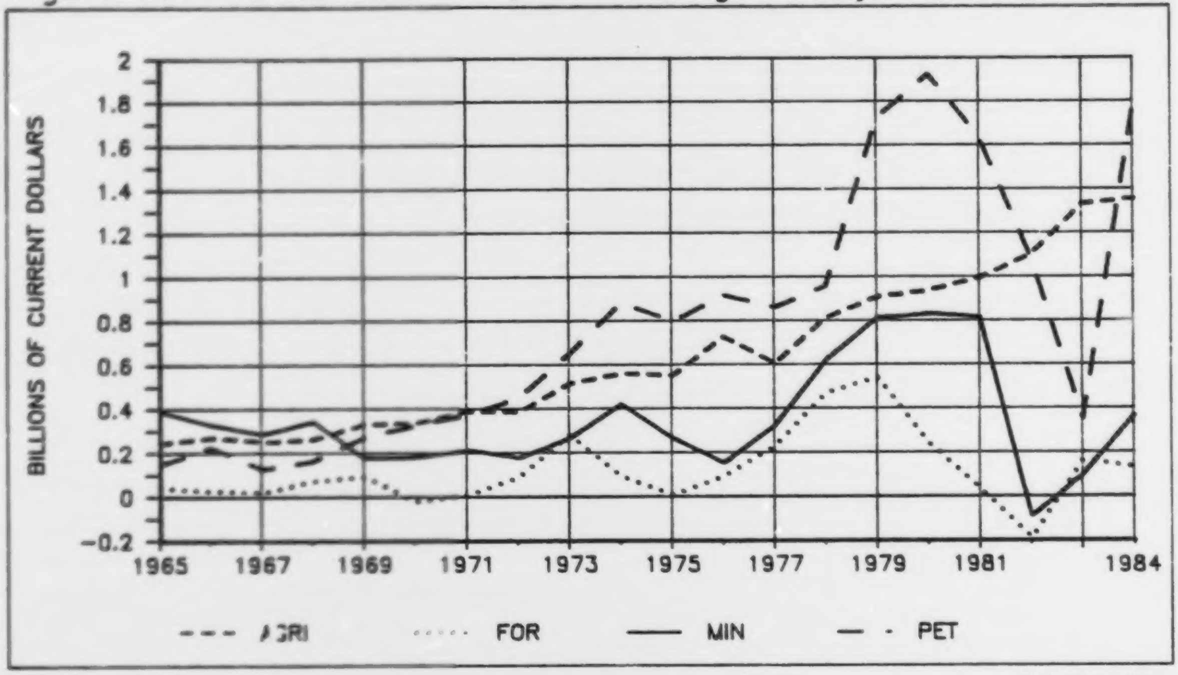


(ref: table N3)

Source: Statistics Canada, Catalogue 61–207.
Constant Dollars Derived Using G.N.E. Deflator

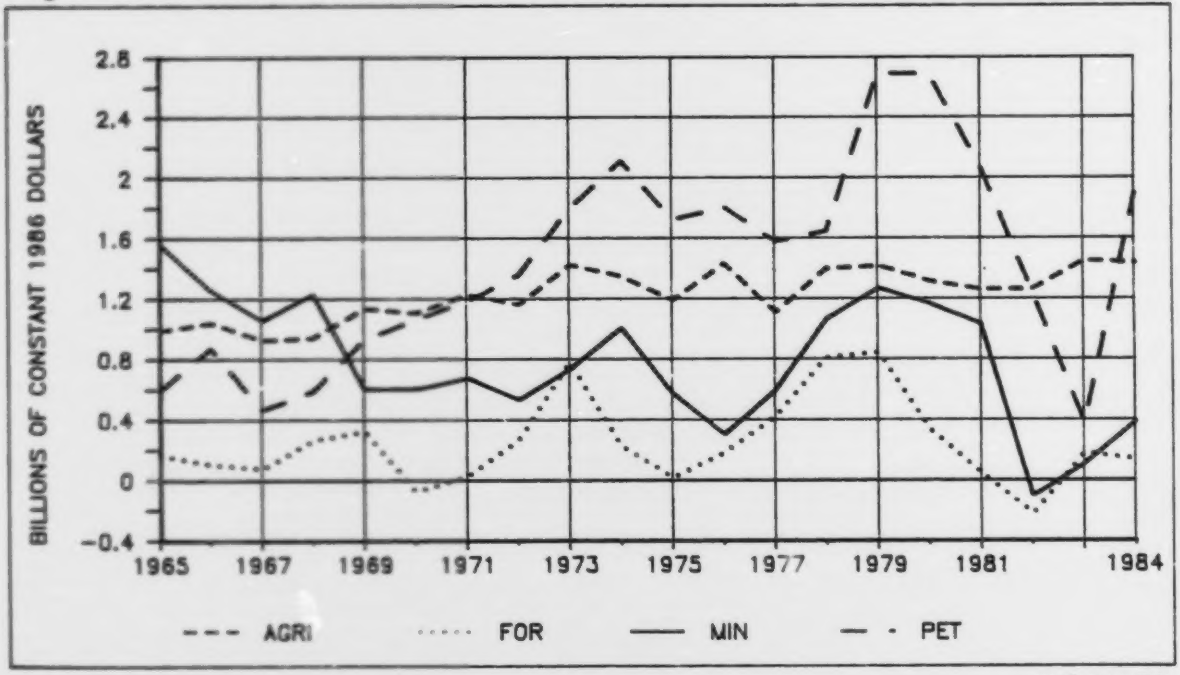
PROFITS AFTER TAX: Processing Activity

Figure 95. Profits After Tax, Processing Activity, Current Dollars



(ref: table O3)

Figure 96. Profits After Tax, Processing Activity, Constant 1986 Dollars

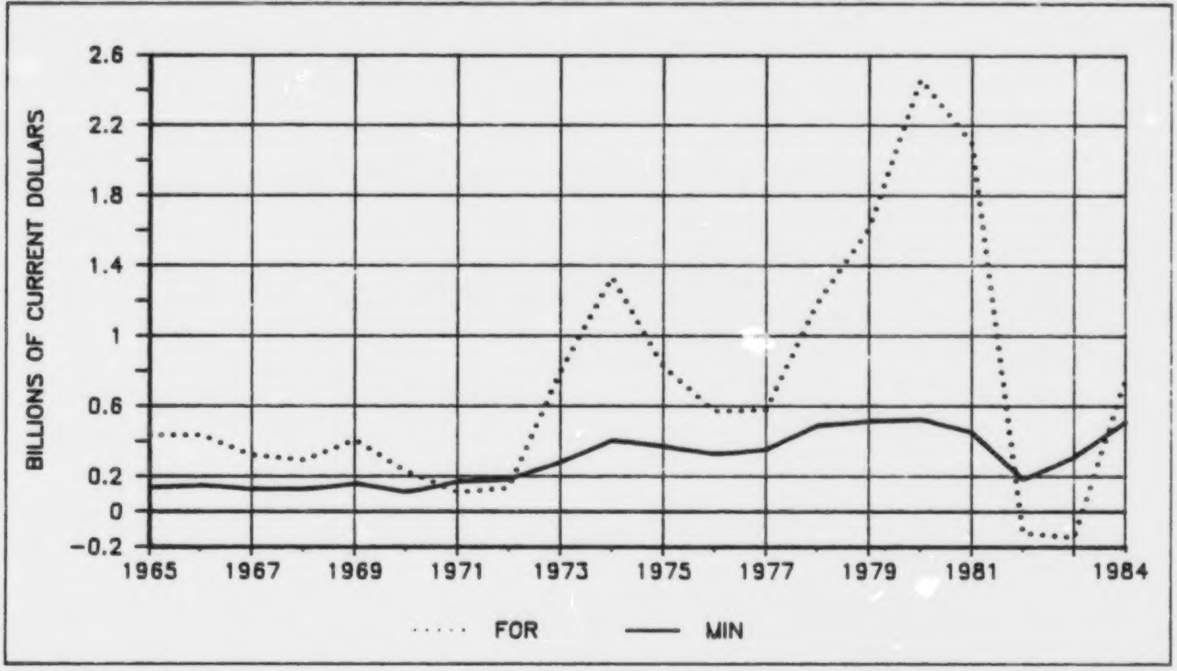


(ref: table P3)

Source: Statistics Canada, Catalogue 61−207.
Constant Dollars Derived Using G.N.E. Deflator

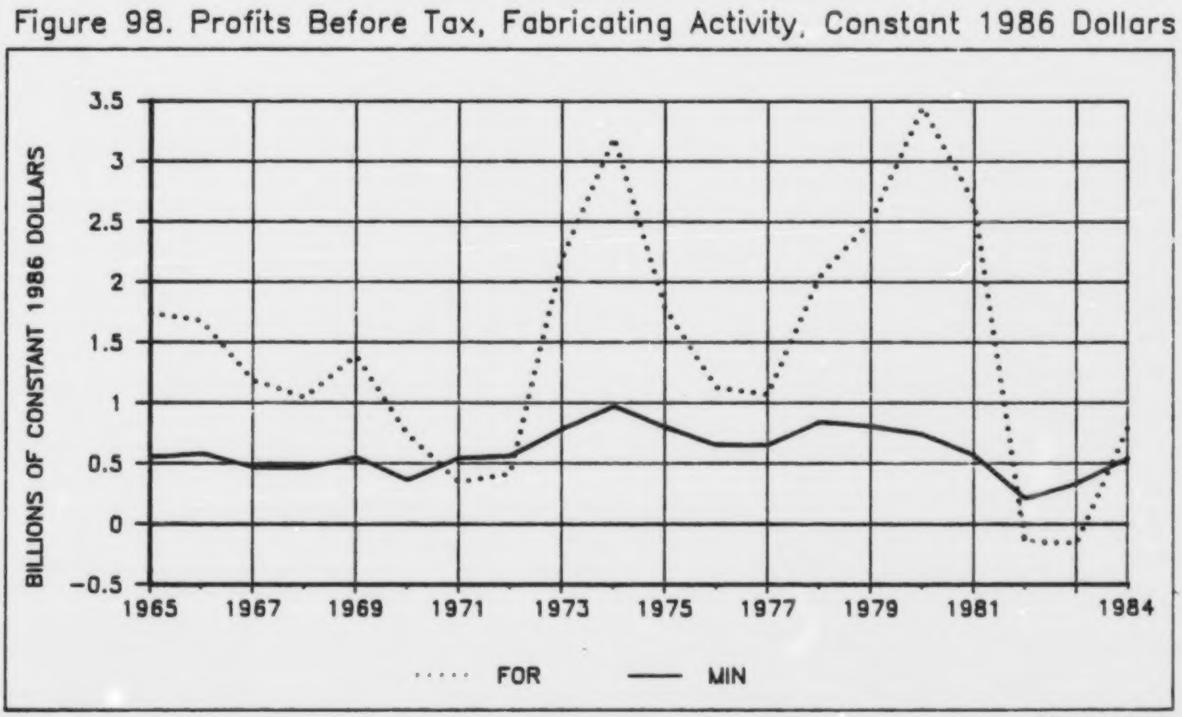
PROFITS BEFORE TAX: Fabricating Activity

Figure 97. Profits Before Tax, Fabricating Activity, Current Dollars



(ref: table M4)

Figure 98. Profits Before Tax, Fabricating Activity, Constant 1986 Dollars

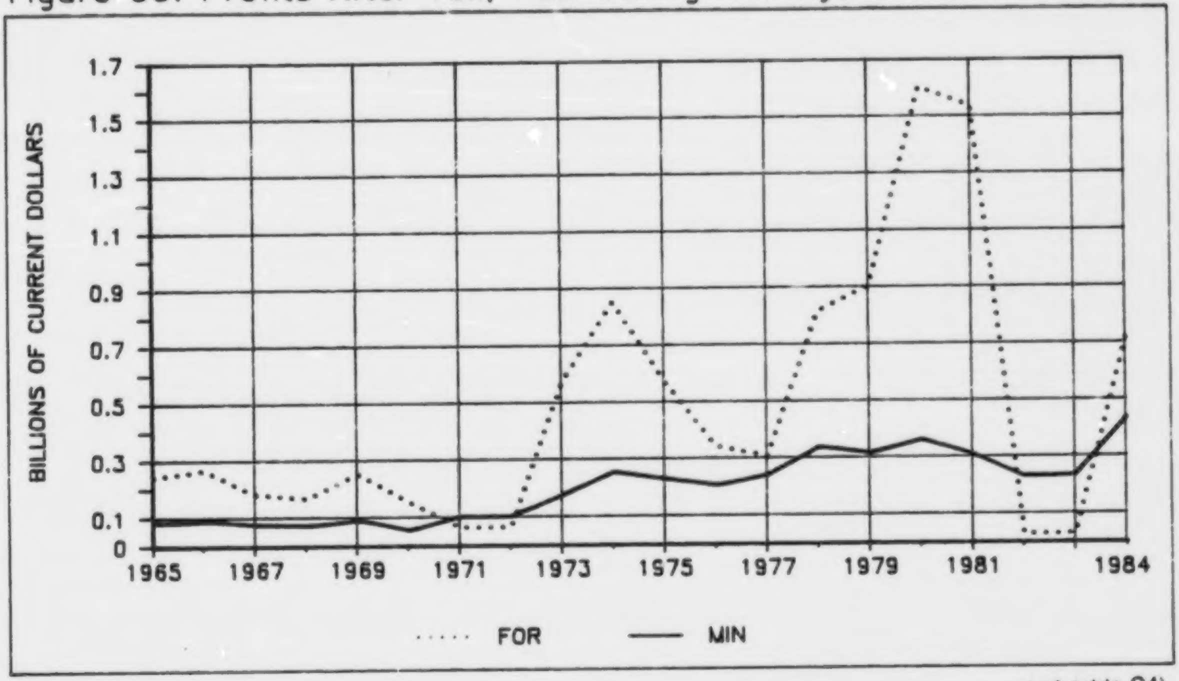


(ref: table N4)

Source: Statistics Canada, Catalogue 61-207.
Constant Dollars Derived Using G.N.E. Deflator

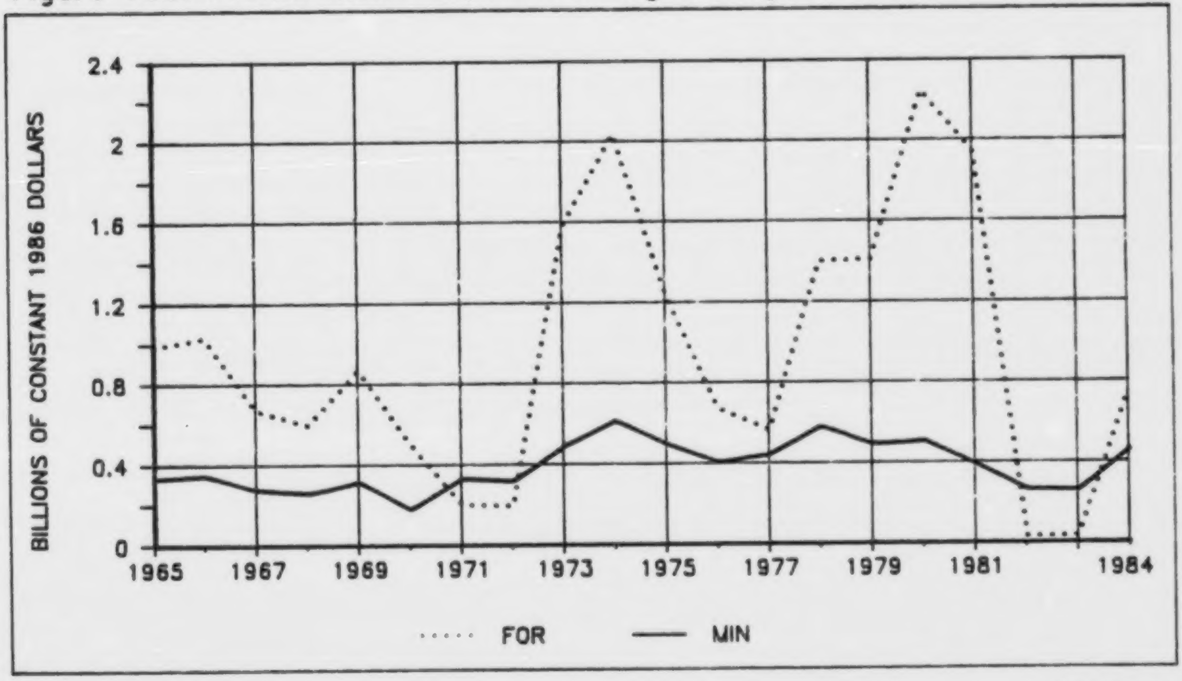
PROFITS AFTER TAX: Fabricating Activity

Figure 99. Profits After Tax, Fabricating Activity, Current Dollars



(ref: table O4)

Figure 100. Profits After Tax, Fabricating Activity, Constant 1986 Dollars

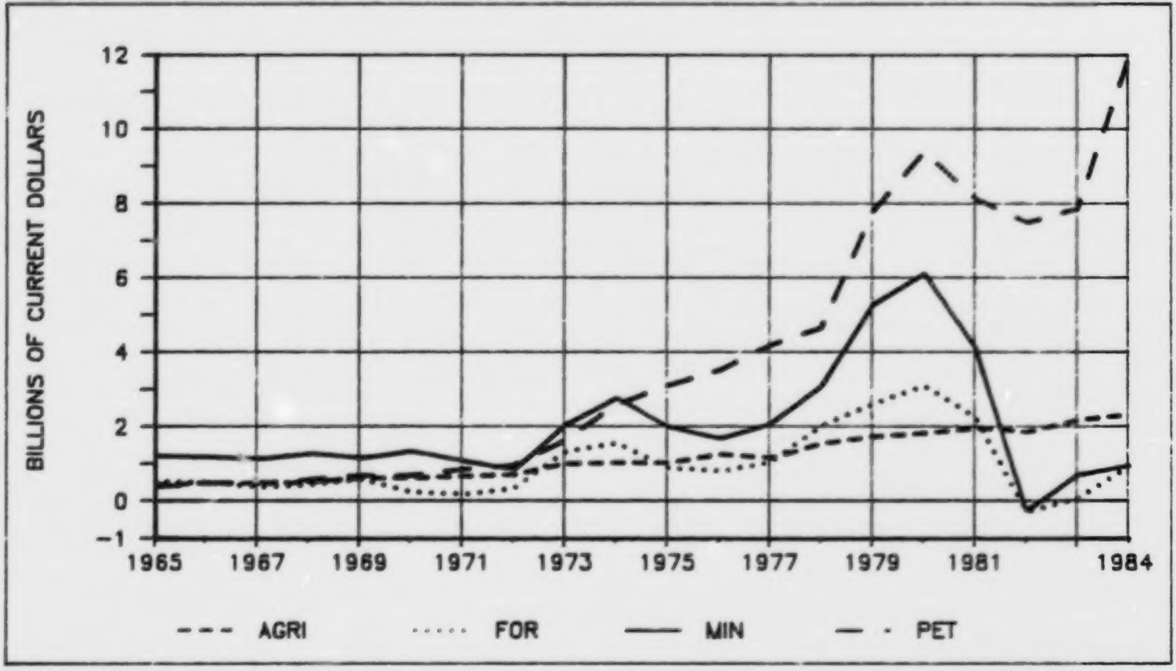


(ref: table P4)

Source: Statistics Canada, Catalogue 61–207.
Constant Dollars Derived Using G.N.E. Deflator

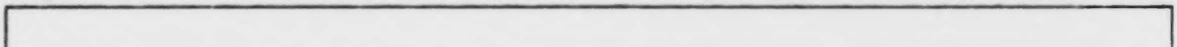
PROFITS BEFORE TAX: Total Activity

Figure 101. Profits Before Tax, Total Activity, Current Dollars



(ref: table M5)

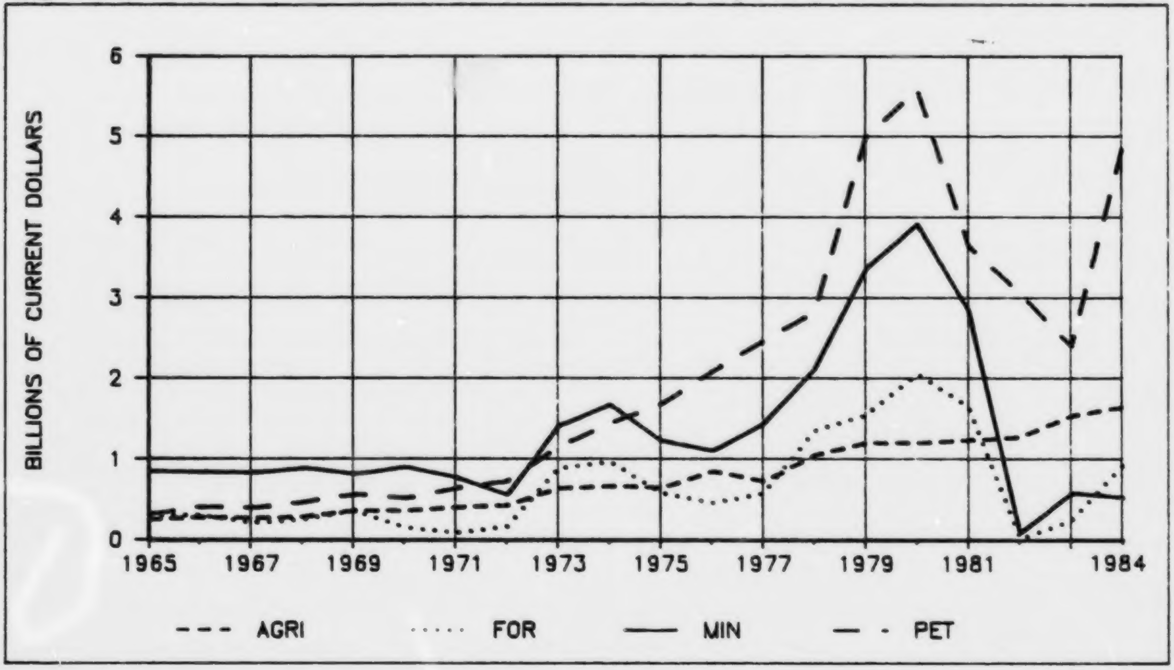
Figure 102. Profits Before Tax, Total Activity, Constant 1986 Dollars



Source: Statistics Canada, Catalogue 61−207.
Constant Dollars Derived Using G.N.E. Deflator

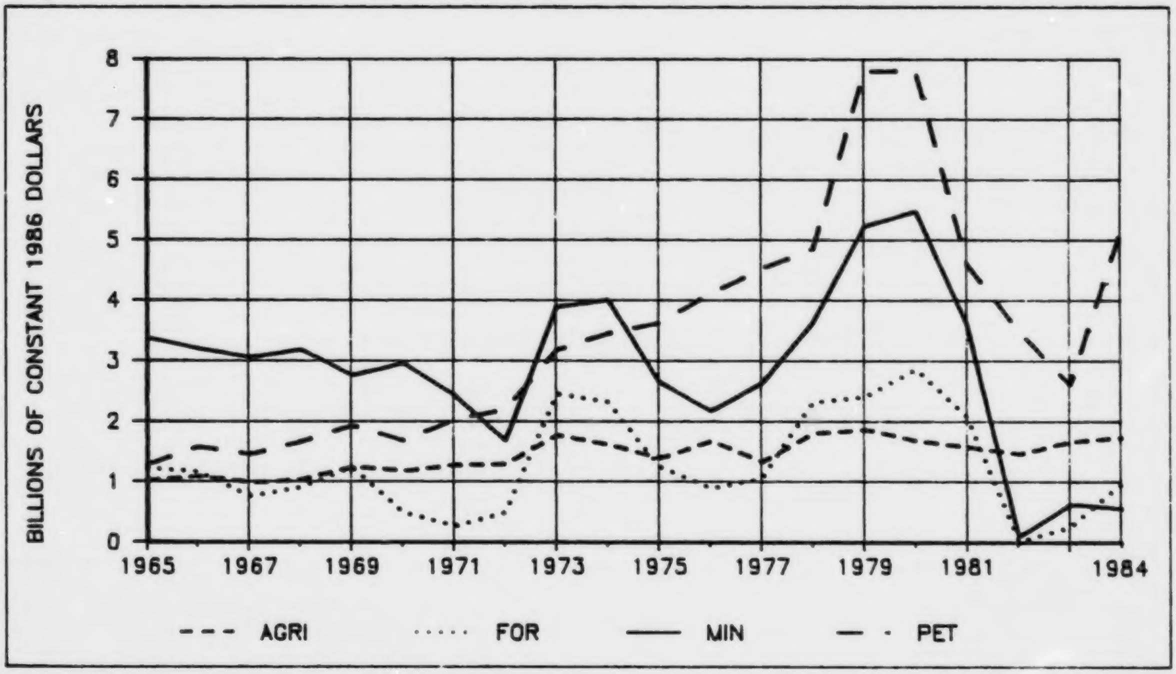
PROFITS AFTER TAX: Total Activity

Figure 103. Profits After Tax, Total Activity, Current Dollars



(ref: table O5)

Figure 104. Profits After Tax, Total Activity, Constant 1986 Dollars

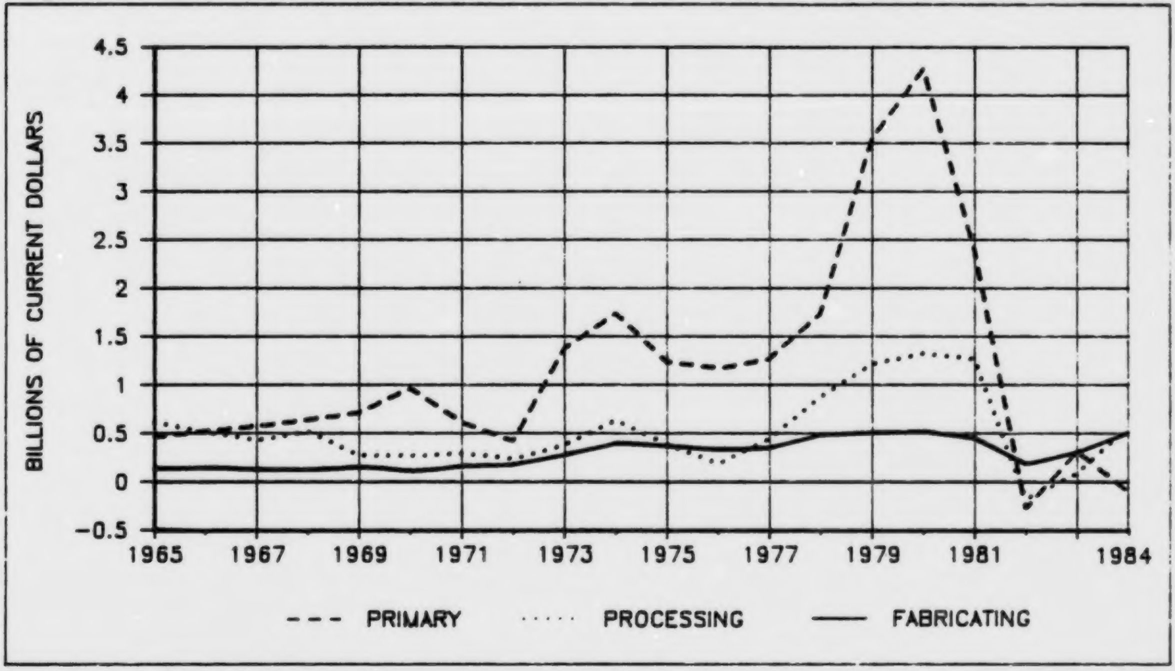


(ref: table P5)

Source: Statistics Canada, Catalogue 61–207.
Constant Dollars Derived Using G.N.E. Deflator

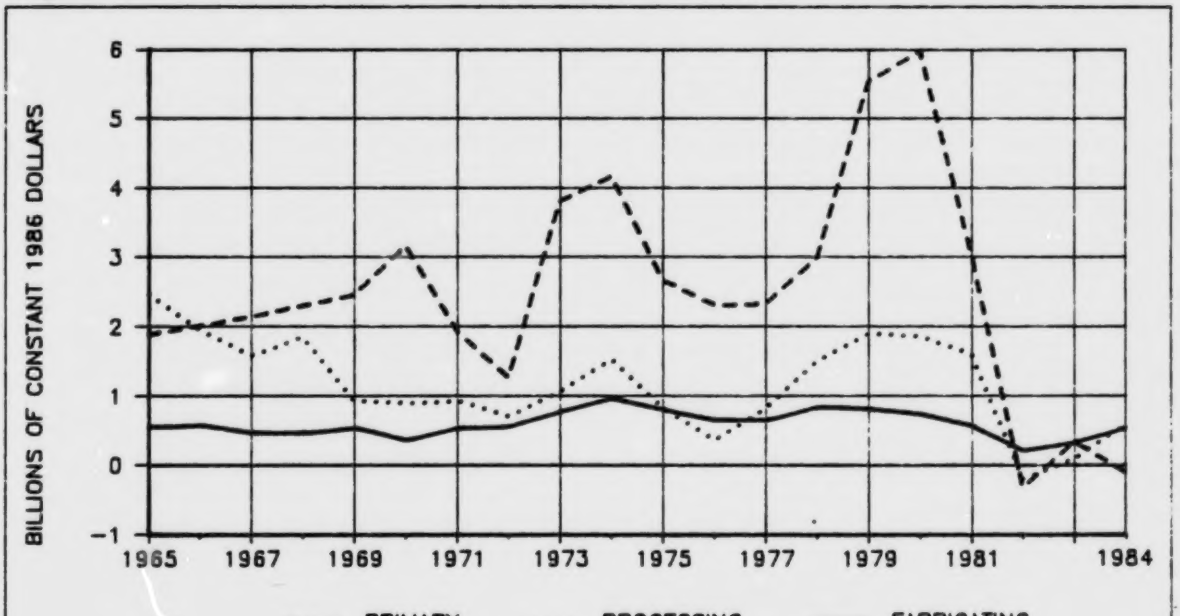
PROFITS BEFORE TAX: Mineral Sector

Figure 105. Profits Before Tax, Mineral Sector, Current Dollars



(ref: table M6)

Figure 106. Profits Before Tax, Mineral Sector, Constant 1986 Dollars

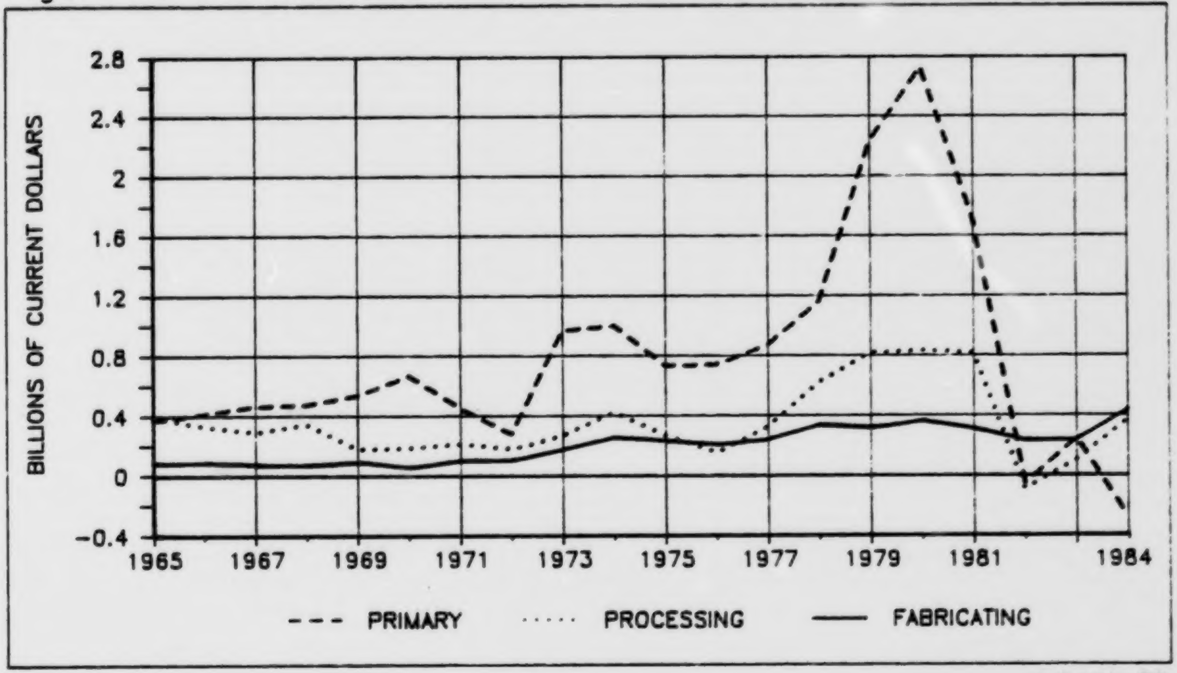


(ref: table N6)

Source: Statistics Canada, Catalogue 61–207.
Constant Dollars Derived Using G.N.E. Deflator

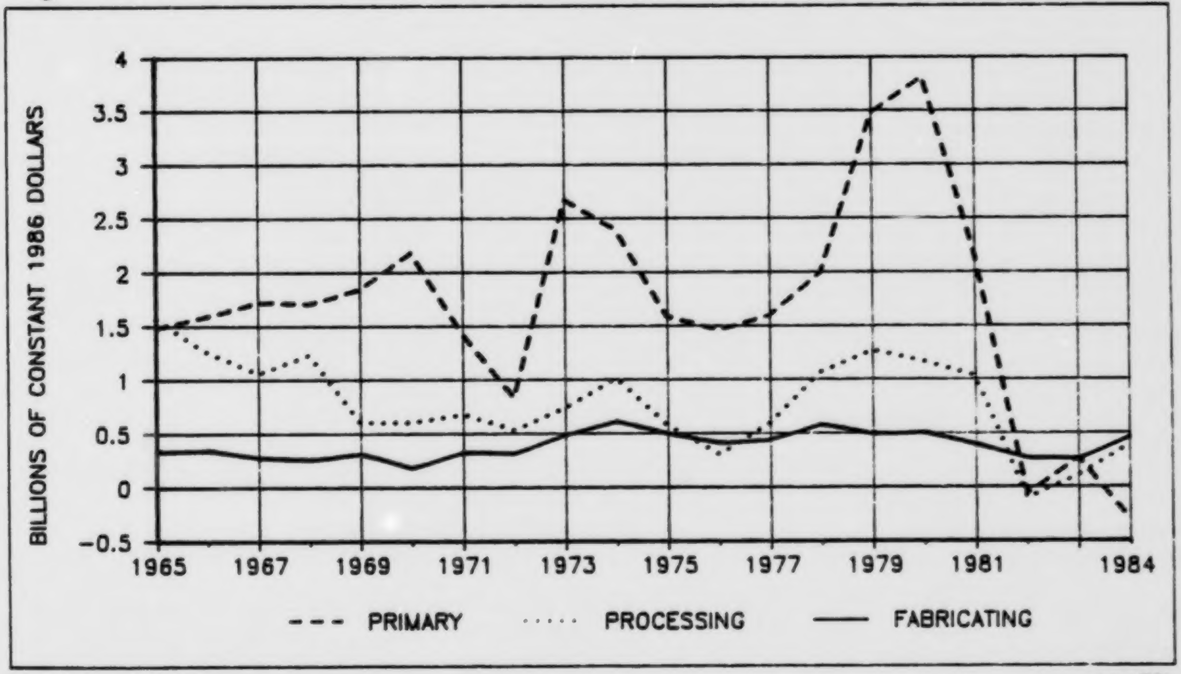
PROFITS AFTER TAX: Mineral Sector

Figure 107. Profits After Tax, Mineral Sector, Current Dollars



(ref: table O6)

Figure 108. Profits After Tax, Mineral Sector, Constant 1986 Dollars



(ref: table R6)

Source: Statistics Canada, Catalogue 61−207.
Constant Dollars Derived Using G.N.E. Deflator

Table M

TABLE 1: PRIMARY ACTIVITY (MILLIONS OF CURRENT DOLLARS)

PROFIT BEFORE TAX	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974
AGRICULTURE	15.1	19.9	21.8	32.8	38.9	34.4	26.0	55.4	150.5	140.7
FORESTRY	27.3	15.1	10.2	25.3	26.4	28.5	20.8	25.2	61.6	43.5
MINERALS	474.3	528.2	585.5	648.3	722.8	973.3	611.4	421.0	1385.8	1745.6
PETROLEUM	203.1	208.7	336.2	371.3	348.8	256.7	341.0	377.4	694.4	1056.3
TOTAL RESOURCES PRIMARY	719.8	771.9	953.7	1077.7	1136.9	1292.9	999.2	879.0	2292.3	2986.1

TABLE 2: MINING INDUSTRY (MILLIONS OF CURRENT DOLLARS)

PROFIT BEFORE TAX	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974
METAL MINES	391.0	417.4	494.6	552.2	652.1	883.3	513.9	335.3	1272.8	1512.0
NON-METAL MINES	78.3	98.0	76.2	81.4	58.3	80.5	97.1	81.9	89.7	183.1
COAL MINES	0.0	2.6	3.3	4.6	-0.6	-0.8	-10.7	-9.2	1.7	32.5
QUARRIES	4.9	10.2	11.3	10.1	12.9	10.5	11.1	13.0	21.6	18.0
TOTAL MINING	474.2	528.2	585.4	648.3	722.7	973.5	611.4	421.0	1385.8	1745.6

TABLE 3: PROCESSING (MILLIONS OF CURRENT DOLLARS)

PROFIT BEFORE TAX	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974
AGRICULTURE	454.9	485.2	463.5	508.3	600.7	611.0	664.9	668.4	872.2	906.7
FORESTRY	69.8	50.0	50.2	131.7	167.3	-12.7	50.5	188.5	479.6	187.7
MINERALS	618.0	511.8	430.0	522.2	272.3	272.8	296.4	236.1	389.0	639.8
PETROLEUM	196.3	299.8	171.1	224.7	364.1	453.5	533.3	610.4	960.2	1555.9
TOTAL RESOURCES PROCESSING	1339.0	1346.8	1114.8	1386.9	1404.4	1324.6	1545.1	1703.4	2701.0	3290.1

TABLE 4: FABRICATING (MILLIONS OF CURRENT DOLLARS)

PROFIT BEFORE TAX	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974
FORESTRY	437.4	439.3	322.9	293.5	408.8	229.2	110.9	138.9	798.5	1336.8
MINERALS	139.7	154.2	127.3	131.0	162.7	111.9	174.1	189.4	285.5	407.8
TOTAL RESOURCES FABRICATING	577.1	593.5	450.2	424.5	571.5	341.1	285.0	328.3	1084.0	1744.6

TABLE 5: TOTAL ACTIVITY (MILLIONS OF CURRENT DOLLARS)

PROFIT BEFORE TAX	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974
AGRICULTURE	470.0	505.1	485.3	541.1	639.6	645.4	690.9	723.8	1022.7	1047.4
FORESTRY	534.5	504.4	383.3	450.5	602.5	245.0	182.2	352.6	1339.7	1568.0
MINERALS	1232.0	1194.2	1142.8	1301.5	1157.8	1358.0	1081.9	846.5	2060.3	2793.2
PETROLEUM	399.4	508.5	507.3	596.0	712.9	710.2	874.3	987.8	1654.6	2612.2
TOTAL RESOURCES TOTAL ACTIVITY	2635.9	2712.2	2518.7	2889.1	3112.8	2958.6	2829.3	2910.7	6077.3	8020.8
TOTAL, ALL INDUSTRIES	6880.8	8219.4	8191.0	9246.0	10131.8	9651.2	11616.5	11553.0	16980.1	23890.0

TABLE 6: MINERAL SECTOR (MILLIONS OF CURRENT DOLLARS)

PROFIT BEFORE TAX	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974
PRIMARY	474.3	528.2	585.5	648.3	722.8	973.3	611.4	421.0	1385.8	1745.6
PROCESSING	618.0	511.8	430.0	522.2	272.3	272.8	296.4	236.1	389.0	639.8
FABRICATING	139.7	154.2	127.3	131.0	162.7	111.9	174.1	189.4	285.5	407.8
TOTAL MINERAL SECTOR	1232.0	1194.2	1142.8	1301.5	1157.8	1358.0	1081.9	846.5	2060.3	2793.2

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*******************************************************************************

   1975    1976    1977    1978    1979    1980    1981    1982    1983    1984

  122.7   155.4   159.4   303.0   383.4   355.8   360.4   132.9   184.3   309.2
    8.4    35.6    64.8    88.7   145.7   264.0    81.2   163.0    41.9    67.7
 1235.6  1170.8  1274.2  1743.5  3557.0  4275.8  2403.0  -271.1   321.1  -101.2
 1640.7  2102.5  2848.7  3075.2  5132.0  6095.9  5165.4  6004.1  7224.7  9293.0
 ------  ------  ------  ------  ------  ------  ------  ------  ------  ------
 3007.4  3464.3  4347.1  5210.4  9218.1 10991.5  8010.0  6028.9  7772.0  9568.7
-------------------------------------------------------------------------------

   1975    1976    1977    1978    1979    1980    1981    1982    1983    1984

  845.7   754.1   854.0  1284.8  3003.6  3268.2  1755.2  -439.7   166.2  -302.6
  182.9   226.7   257.5   247.0   378.2   459.5   437.5    47.5    50.6    63.3
  187.4   167.2   138.1   185.7   146.1   514.0   179.8   117.9    94.9   103.2
   19.5    22.8    24.7    26.1    29.1    34.1    30.5     5.1     9.4    34.9
 ------  ------  ------  ------  ------  ------  ------  ------  ------  ------
 1235.5  1170.8  1274.3  1743.6  3557.0  4275.8  2403.0  -269.2   321.1  -101.2
-------------------------------------------------------------------------------

   1975    1976    1977    1978    1979    1980    1981    1982    1983    1984

  912.8  1116.2   995.2  1263.0  1372.1  1488.0  1605.2  1727.4  2006.4  2034.8
   60.0   205.7   401.6   749.8   871.6   379.9    69.3  -328.5   184.0   120.5
  386.3   186.4   450.7   878.1  1221.6  1329.9  1266.2  -174.5    91.8   566.5
 1487.5  1423.8  1366.7  1607.4  2685.5  3308.6  2966.2  1499.5   663.7  2650.6
 ------  ------  ------  ------  ------  ------  ------  ------  ------  ------
 2846.6  2932.1  3214.2  4498.3  6150.8  6506.4  5906.9  2723.9  2945.9  5372.4
-------------------------------------------------------------------------------

   1975    1976    1977    1978    1979    1980    1981    1982    1983    1984

  826.2   573.0   582.3  1191.4  1615.6  2465.2  2095.9  -121.8  -146.8   757.4
  371.4   330.7   358.3   493.0   518.7   528.3   450.7   185.3   314.0   516.2
 ------  ------  ------  ------  ------  ------  ------  ------  ------  ------
 1197.6   903.7   940.6  1684.4  2134.3  2993.5  2546.6    63.5   167.2  1273.6
-------------------------------------------------------------------------------

   1975    1976    1977    1978    1979    1980    1981    1982    1983    1984

 1035.5  1271.6  1154.6  1566.0  1755.5  1843.8  1965.6  1860.3  2190.7  2344.0
  894.6   814.3  1048.7  2029.9  2632.9  3109.1  2246.4  -287.3    79.1   945.6
 1993.3  1687.9  2083.2  3114.6  5297.3  6134.0  4119.9  -260.3   726.9   981.5
 3128.2  3526.3  4215.4  4682.6  7817.5  9404.5  8131.6  7503.6  7888.4 11943.6
 ------  ------  ------  ------  ------  ------  ------  ------  ------  ------
 7051.6  7300.1  8501.9 11393.1 17503.2 20491.4 16463.5  8816.3 10885.1 16214.7

23366.2 24385.4 25776.6 33556.3 46201.1 51727.8 51257.5 28510.1 38566.0 53354.5
-------------------------------------------------------------------------------

   1975    1976    1977    1978    1979    1980    1981    1982    1983    1984

 1235.6  1170.8  1274.2  1743.5  3557.0  4275.8  2403.0  -271.1   321.1  -101.2
  386.3   186.4   450.7   878.1  1221.6  1329.9  1266.2  -174.5    91.8   566.5
  371.4   330.7   358.3   493.0   518.7   528.3   450.7   185.3   314.0   516.2
 ------  ------  ------  ------  ------  ------  ------  ------  ------  ------
 1993.3  1687.9  2083.2  3114.6  5297.3  6134.0  4119.9  -260.3   726.9   981.5
-------------------------------------------------------------------------------
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Table N

TABLE 1: PRIMARY ACTIVITY				MILLIONS OF CONSTANT 1986 DOLLARS							
PROFIT BEFORE TAX	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975
AGRICULTURE	60.3	76.1	80.2	116.9	132.7	112.2	82.2	166.7	415.0	336.6	265.0
FORESTRY	109.1	57.8	37.5	90.1	90.1	92.9	65.7	75.8	169.9	104.1	18.1
MINERALS	1894.8	2020.7	2153.9	2309.6	2466.6	3174.0	1932.0	1267.0	3821.2	4175.7	2668.8
PETROLEUM	811.4	798.4	1236.8	1322.8	1190.3	837.1	1077.6	1135.8	1914.8	2526.8	3543.8
TOTAL RESOURCES PRIMARY	2875.6	2953.0	3508.4	3839.4	3879.7	4216.3	3157.5	2645.4	6320.8	7143.1	6495.8

TABLE 2: MINING INDUSTRY				MILLIONS OF CONSTANT 1986 DOLLARS							
PROFIT BEFORE TAX	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975
METAL MINES	1562.0	1596.8	1819.5	1967.3	2225.3	2880.5	1623.9	1009.1	3509.6	3616.9	1826.7
NON-METAL MINES	312.8	374.9	280.3	290.0	199.0	262.5	306.8	246.5	247.3	438.0	395.1
COAL MINES	0.0	9.9	12.1	16.4	-2.0	-2.6	-33.8	-27.7	4.7	77.7	404.8
QUARRIES	19.6	39.0	41.6	36.0	44.0	34.2	35.1	39.1	59.6	43.1	42.1
TOTAL MINING	1894.4	2020.7	2153.5	2309.6	2466.2	3174.7	1932.0	1267.0	3821.2	4175.7	2668.6

TABLE 3: PROCESSING				MILLIONS OF CONSTANT 1986 DOLLARS							
PROFIT BEFORE TAX	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975
AGRICULTURE	1817.3	1856.2	1705.1	1810.9	2049.9	1992.5	2101.1	2011.6	2405.0	2168.9	1971.6
FORESTRY	278.8	191.3	184.7	469.2	570.9	-41.4	159.6	567.3	1322.5	449.0	129.6
MINERALS	2468.9	1958.0	1581.8	1860.4	929.2	889.6	936.6	710.5	1072.6	1530.5	834.4
PETROLEUM	784.2	1146.9	629.4	800.5	1242.5	1478.9	1685.2	1837.0	2647.7	3721.9	3212.9
TOTAL RESOURCES PROCESSING	5349.2	5152.4	4101.0	4940.9	4792.6	4319.6	4882.5	5126.4	7447.8	7870.3	6148.5

TABLE 4: FABRICATING				MILLIONS OF CONSTANT 1986 DOLLARS							
PROFIT BEFORE TAX	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975
FORESTRY	1747.4	1680.6	1187.9	1045.6	1395.0	747.4	350.4	418.0	2201.8	3197.8	1784.5
MINERALS	558.1	589.9	468.3	466.7	555.2	364.9	550.2	570.0	787.2	975.5	802.2
TOTAL RESOURCES FABRICATING	2305.5	2270.5	1656.1	1512.3	1950.3	1112.4	900.6	988.0	2989.0	4173.3	2586.8

TABLE 5: TOTAL ACTIVITY				MILLIONS OF CONSTANT 1986 DOLLARS							
PROFIT BEFORE TAX	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975
AGRICULTURE	1877.6	1932.3	1785.3	1927.7	2182.7	2104.7	2183.2	2178.3	2820.0	2505.5	2236.6
FORESTRY	2135.3	1929.7	1410.0	1604.9	2056.0	799.0	575.8	1061.2	3694.1	3750.9	1932.3
MINERALS	4921.8	4568.6	4204.0	4636.7	3951.0	4428.6	3418.8	2547.6	5681.1	6681.7	4305.4
PETROLEUM	1595.6	1945.4	1866.2	2123.3	2432.8	2316.0	2762.8	2972.8	4562.4	6248.7	6756.7
TOTAL RESOURCES TOTAL ACTIVITY	10530.3	10376.0	9265.5	10292.6	10622.5	9648.3	8940.6	8759.8	16757.7	19186.8	15231.1
TOTAL, ALL INDUSTRIES	27488.4	31444.7	30132.2	32939.5	34575.0	31473.5	36708.1	34769.0	46821.2	57147.9	50469.7

TABLE 6: MINERAL SECTOR				MILLIONS OF CONSTANT 1986 DOLLARS							
PROFIT BEFORE TAX	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975
PRIMARY	1894.8	2020.7	2153.9	2309.6	2466.6	3174.0	1932.0	1267.0	3821.2	4175.7	2668.8
PROCESSING	2468.9	1958.0	1581.8	1860.4	929.2	889.6	936.6	710.5	1072.6	1530.5	834.4
FABRICATING	558.1	589.9	468.3	466.7	555.2	364.9	550.2	570.0	787.2	975.5	802.2
TOTAL MINERAL SECTOR	4921.8	4568.6	4204.0	4636.7	3951.0	4428.6	3418.8	2547.6	5681.1	6681.7	4305.4

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***************************************************************************************************************************************

                                                                             =====  AVERAGE =========  ====== C.O.V. =======
    1976     1977     1978     1979     1980     1981     1982     1983     1984    65-84    65-74    75-84    65-84    65-74    75-84

   306.1    292.3    520.9    597.7    497.9    456.1    152.4    200.8    327.5    259.8    157.9    361.7     62.9     72.3     38.8
    70.1    118.8    152.5    227.1    369.5    102.8    187.0     45.6     71.7    112.8     89.3    136.3     68.7     38.0     72.5
  2306.6   2336.9   2997.5   5545.2   5983.8   3041.0   -311.0    349.8   -107.2   2501.4   2521.6   2481.2     62.6     34.6     82.0
  4142.1   5224.5   5287.1   8000.6   8531.0   6536.9   6886.7   7869.7   9844.4   3935.9   1285.2   6586.7     76.2     40.3     29.2
  ------   ------   ------   ------   ------   ------   ------   ------   ------
  6824.9   7972.6   8958.0  14370.6  15382.3  10136.8   6915.2   8465.9  10136.5   6809.9   4053.9   9565.9     52.7     35.3     30.6
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                                                                             =====  AVERAGE =========  ====== C.O.V. =======
    1976     1977     1978     1979     1980     1981     1982     1983     1984    65-84    65-74    75-84    65-84    65-74    75-84

  1485.6   1566.2   2208.9   4682.5   4573.7   2221.2   -504.3    181.0   -320.6   1986.6   2181.1   1792.1     68.1     38.1     94.9
   446.6    472.3    424.7    589.6    643.1    553.7     54.5     55.1     67.1    333.0    295.8    370.2     49.2     22.0     58.4
   329.4    253.3    319.3    227.8    719.3    227.5    135.2    103.4    109.3    144.2      5.5    282.9    129.1    523.1     61.2
    44.9     45.3     44.9     45.4     47.7     38.6      5.8     10.2     37.0     37.7     39.1     36.2     32.7     24.2     39.9
  ------   ------   ------   ------   ------   ------   ------   ------   ------
  2306.6   2337.1   2997.7   5545.2   5983.8   3041.0   -308.8    349.8   -107.2   2501.4   2521.5   2481.4     62.5     34.6     81.9
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                                                                             =====  AVERAGE =========  ====== C.O.V. =======
    1976     1977     1978     1979     1980     1981     1982     1983     1984    65-84    65-74    75-84    65-84    65-74    75-84

  2199.0   1825.2   2171.4   2139.0   2082.4   2031.4   1981.3   2185.5   2155.5   2033.0   1991.8   2074.2      8.1      9.8      5.5
   405.2    736.5   1289.1   1358.8    531.7     87.7   -376.8    200.4    127.7    432.1    415.2    449.0    103.2     85.8    115.8
   367.2    826.6   1509.7   1904.4   1861.2   1602.4   -200.2    100.0    600.1   1167.2   1393.8    940.6     57.6     39.3     75.3
  2805.0   2506.5   2763.5   4186.6   4630.3   3753.8   1719.9    723.0   2807.9   2254.2   1597.4   2910.9     53.1     56.9     37.3
  ------   ------   ------   ------   ------   ------   ------   ------   ------
  5776.5   5894.9   7733.7   9588.8   9105.5   7475.3   3124.3   3208.9   5691.2   5886.5   5398.3   6374.8     29.8     22.0     32.4
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                                                                             =====  AVERAGE =========  ====== C.O.V. =======
    1976     1977     1978     1979     1980     1981     1982     1983     1984    65-84    65-74    75-84    65-84    65-74    75-84

  1128.9   1067.9   2048.3   2518.6   3450.0   2652.4   -139.7   -159.9    802.3   1456.3   1397.2   1515.3     68.0     58.7     74.7
   651.5    657.1    847.6    808.6    739.3    570.4    212.5    342.0    546.8    603.2    588.6    617.8     30.2     28.0     31.9
  ------   ------   ------   ------   ------   ------   ------   ------   ------
  1780.4   1725.1   2895.9   3327.3   4189.3   3222.8     72.8    182.1   1349.2   2059.5   1985.8   2133.2     55.3     48.4     60.4
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                                                                             =====  AVERAGE =========  ====== C.O.V. =======
    1976     1977     1978     1979     1980     1981     1982     1983     1984    65-84    65-74    75-84    65-84    65-74    75-84

  2505.1   2117.5   2692.4   2736.7   2580.3   2487.5   2133.8   2386.3   2483.1   2292.8   2149.7   2435.9     12.8     13.8      8.4
  1604.2   1923.3   3489.9   4104.6   4351.1   2842.9   -329.5     86.2   1001.7   2001.2   1901.7   2100.7     65.1     54.4     72.3
  3325.3   3820.6   5354.8   8258.2   8584.3   5213.8   -298.6    791.8   1039.7   4271.8   4504.0   4039.5     50.6     24.0     70.3
  6947.1   7731.1   8050.6  12187.1  13161.3  10290.7   8606.7   8592.7  12652.3   6190.1   2882.6   9497.6     61.5     47.6     24.0
  ------   ------   ------   ------   ------   ------   ------   ------   ------
 14381.7  15592.6  19587.7  27286.7  28677.1  20834.9  10112.3  11856.9  17176.8  14755.9  11438.0  18073.8     39.3     29.5     32.2

 48041.1  47274.6  57692.0  72025.4  72391.4  64867.3  32701.2  42009.2  56520.4  45374.6  36350.0  54399.2     30.6     23.4     22.4
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                                                                             =====  AVERAGE =========  ====== C.O.V. =======
    1976     1977     1978     1979     1980     1981     1982     1983     1984    65-84    65-74    75-84    65-84    65-74    75-84

  2306.6   2336.9   2997.5   5545.2   5983.8   3041.0   -311.0    349.8   -107.2   2501.4   2521.6   2481.2     62.6     34.6     82.0
   367.2    826.6   1509.7   1904.4   1861.2   1602.4   -200.2    100.0    600.1   1167.2   1393.8    940.6     57.6     39.3     75.3
   651.5    657.1    847.6    808.6    739.3    570.4    212.5    342.0    546.8    603.2    588.6    617.8     30.2     28.0     31.9
  ------   ------   ------   ------   ------   ------   ------   ------   ------
  3325.3   3820.6   5354.8   8258.2   8584.3   5213.8   -298.6    791.8   1039.7   4271.8   4504.0   4039.5     50.6     24.0     70.3
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Table O

TABLE 1: PRIMARY ACTIVITY (MILLIONS OF CURRENT DOLLARS)

PROFIT AFTER TAX	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975
AGRICULTURE	11.2	15.0	16.7	27.8	32.4	26.4	18.4	46.7	127.4	111.4	94.6
FORESTRY	17.5	8.8	4.2	14.1	14.8	20.6	12.9	12.0	36.0	25.2	0.6
MINERALS	372.6	417.4	468.5	479.0	540.9	669.8	450.8	276.3	969.4	1000.3	732.6
PETROLEUM	174.8	185.5	268.6	303.5	295.1	188.8	271.2	281.1	504.4	563.3	888.5
TOTAL RESOURCES PRIMARY	576.1	626.7	758.0	824.4	883.2	905.6	753.3	616.1	1637.2	1700.2	1716.3

TABLE 2: MINING INDUSTRY (MILLIONS OF CURRENT DOLLARS)

PROFIT AFTER TAX	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975
METAL MINES	315.5	344.3	408.6	415.3	496.5	612.9	387.1	223.5	896.7	845.4	498.2
NON-METAL MINES	54.7	65.6	49.3	53.6	35.5	52.3	68.9	54.4	59.2	116.0	96.3
COAL MINES	-0.5	2.2	3.1	3.8	-0.4	-1.5	-11.9	-9.9	-1.1	27.8	125.4
QUARRIES	2.8	5.3	7.4	6.3	9.2	6.0	6.8	8.4	14.6	11.2	12.6
TOTAL MINING	372.5	417.4	468.4	479.0	540.8	669.7	450.9	276.4	969.4	1000.4	732.5

TABLE 3: PROCESSING (MILLIONS OF CURRENT DOLLARS)

PROFIT AFTER TAX	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975
AGRICULTURE	248.9	273.0	252.2	266.0	333.6	339.4	390.2	386.9	518.3	564.1	552.1
FORESTRY	42.1	27.3	20.8	76.1	95.4	-22.1	9.5	90.1	283.7	94.2	8.8
MINERALS	393.2	329.7	288.2	346.7	177.0	186.0	215.6	177.7	268.6	423.8	266.8
PETROLEUM	150.5	229.3	127.4	167.0	274.3	327.4	376.3	452.7	653.6	885.0	799.0
TOTAL RESOURCES PROCESSING	834.7	859.3	688.6	855.8	880.3	830.7	991.6	1107.4	1724.2	1967.1	1626.7

TABLE 4: FABRICATING (MILLIONS OF CURRENT DOLLARS)

PROFIT AFTER TAX	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975
FORESTRY	247.8	269.8	182.6	167.6	255.3	154.8	64.0	65.0	573.4	851.5	574.2
MINERALS	83.9	91.6	75.3	72.6	93.5	55.1	105.3	105.4	178.7	258.3	230.4
TOTAL RESOURCES FABRICATING	331.7	361.4	257.9	240.2	348.8	209.9	169.3	170.4	752.1	1109.8	804.6

TABLE 5: TOTAL ACTIVITY (MILLIONS OF CURRENT DOLLARS)

PROFIT AFTER TAX	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975
AGRICULTURE	260.1	288.0	268.9	293.8	366.0	365.8	408.6	433.6	645.7	675.5	646.7
FORESTRY	307.4	305.9	207.6	257.8	365.5	153.3	86.4	167.1	893.1	970.9	583.6
MINERALS	849.7	838.7	832.0	898.3	811.4	910.9	771.7	559.4	1416.7	1682.4	1229.8
PETROLEUM	325.3	414.8	396.0	470.5	569.4	516.2	647.5	733.8	1158.0	1448.3	1687.5
TOTAL RESOURCES TOTAL ACTIVITY	1742.5	1847.4	1704.5	1920.4	2112.3	1946.2	1914.2	1893.9	4113.5	4777.1	4147.6
TOTAL, ALL INDUSTRIES	4501.0	5628.3	5586.6	6216.1	6678.2	6251.5	7895.7	7431.0	11065.7	15445.1	14932.4

TABLE 6: MINERAL SECTOR (MILLIONS OF CURRENT DOLLARS)

PROFIT AFTER TAX	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975
PRIMARY	372.6	417.4	468.5	479.0	540.9	669.8	450.8	276.3	969.4	1000.3	732.6
PROCESSING	393.2	329.7	288.2	346.7	177.0	186.0	215.6	177.7	268.6	423.8	266.8
FABRICATING	83.9	91.6	75.3	72.6	93.5	55.1	105.3	105.4	178.7	258.3	230.4
TOTAL MINERAL SECTOR	849.7	838.7	832.0	898.3	811.4	910.9	771.7	559.4	1416.7	1682.4	1229.8

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    1976    1977    1978    1979    1980    1981    1982    1983    1984

   125.5   121.5   239.8   294.6   264.5   250.5   173.6   205.8   293.7
    21.6    42.2    62.4   101.0   210.8    66.0   182.6    47.0    76.2
   743.6   873.5  1161.8  2234.5  2726.0  1710.9   -53.0   248.8  -282.8
  1175.2  1609.2  1871.1  3277.9  3663.4  2001.1  1974.4  2042.8  3094.0
  ------  ------  ------  ------  ------  ------  ------  ------  ------
  2065.9  2646.4  3335.1  5908.0  6864.7  4028.5  2277.6  2544.4  3181.1
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    1976    1977    1978    1979    1980    1981    1982    1983    1984

   508.8   654.2   909.6  1909.3  1982.8  1284.4  -136.2   192.9  -392.0
   134.1   149.9   137.3   230.1   327.0   294.4    12.8    11.8    -1.1
    86.3    53.7    96.1    76.9   393.1   114.0    66.8    34.6    74.8
    14.5    15.7    18.8    18.2    23.0    18.2     3.7     9.5    35.5
  ------  ------  ------  ------  ------  ------  ------  ------  ------
   743.7   873.5  1161.8  2234.5  2725.9  1711.0   -52.9   248.8  -282.8
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    1976    1977    1978    1979    1980    1981    1982    1983    1984

   729.7   605.8   817.2   911.4   941.1   997.4  1105.7  1335.5  1358.1
    93.7   231.5   474.1   545.0   241.9    35.7  -190.3   167.4   132.0
   154.3   326.9   623.2   818.3   834.0   816.1   -90.0   101.7   371.5
   919.1   862.6   961.3  1728.1  1925.4  1636.0  1084.5   352.9  1795.2
  ------  ------  ------  ------  ------  ------  ------  ------  ------
  1896.8  2026.8  2875.8  4002.8  3942.4  3485.2  1909.9  1957.5  3656.8
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    1976    1977    1978    1979    1980    1981    1982    1983    1984

   343.1   308.4   816.9   906.0  1603.8  1536.1    27.6    32.3   722.1
   206.6   243.4   339.4   315.9   365.0   309.8   231.2   237.6   438.6
  ------  ------  ------  ------  ------  ------  ------  ------  ------
   549.7   551.8  1156.3  1221.9  1968.8  1845.9   258.8   269.9  1160.7
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    1976    1977    1978    1979    1980    1981    1982    1983    1984

   855.2   727.3  1057.0  1206.0  1205.6  1247.9  1279.3  1541.3  1651.8
   458.4   582.1  1353.4  1552.0  2056.5  1637.8    19.9   246.7   930.3
  1104.5  1443.8  2124.4  3368.7  3925.0  2836.8    88.2   588.1   527.3
  2094.3  2471.8  2832.4  5006.0  5588.8  3637.1  3058.9  2395.7  4889.2
  ------  ------  ------  ------  ------  ------  ------  ------  ------
  4512.4  5225.0  7367.2 11132.7 12775.9  9359.6  4446.3  4771.8  7998.6

 16217.9 17279.2 23448.1 32408.2 35848.6 35372.2 23357.4 29357.4 42624.2
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    1976    1977    1978    1979    1980    1981    1982    1983    1984

   743.6   873.5  1161.8  2234.5  2726.0  1710.9   -53.0   248.8  -282.8
   154.3   326.9   623.2   818.3   834.0   816.1   -90.0   101.7   371.5
   206.6   243.4   339.4   315.9   365.0   309.8   231.2   237.6   438.6
  ------  ------  ------  ------  ------  ------  ------  ------  ------
  1104.5  1443.8  2124.4  3368.7  3925.0  2836.8    88.2   588.1   527.3
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Table P

TABLE 1: PRIMARY ACTIVITY (MILLIONS OF CONSTANT 1986 DOLLARS)

PROFIT AFTER TAX	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975
AGRICULTURE	44.7	57.4	61.4	99.0	110.6	86.1	58.1	140.5	351.3	266.5	204.3
FORESTRY	69.9	33.7	15.5	50.2	50.5	67.2	40.8	36.1	99.3	60.3	1.3
MINERALS	1488.5	1596.8	1723.5	1706.5	1845.8	2184.3	1424.5	831.5	2673.0	2392.8	1582.4
PETROLEUM	698.3	709.7	988.1	1081.2	1007.0	615.7	857.0	846.0	1390.8	1347.5	1919.1
TOTAL RESOURCES PRIMARY	2301.5	2397.5	2788.5	2937.0	3013.9	2953.2	2380.4	1854.2	4514.4	4067.1	3707.1

TABLE 2: MINING INDUSTRY (MILLIONS OF CONSTANT 1986 DOLLARS)

PROFIT AFTER TAX	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975
METAL MINES	1260.4	1317.2	1503.1	1479.5	1694.3	1998.7	1223.2	672.6	2472.6	2022.3	1076.1
NON-METAL MINES	218.5	251.0	181.4	191.0	121.1	170.6	217.7	163.7	163.2	277.5	208.0
COAL MINES	-2.0	8.4	11.4	13.5	-1.4	-4.9	-37.6	-29.8	-3.0	66.5	270.9
QUARRIES	11.2	20.3	27.2	22.4	31.4	19.6	21.5	25.3	40.3	26.8	27.2
TOTAL MINING	1488.1	1596.8	1723.1	1706.5	1845.5	2184.0	1424.8	831.8	2673.0	2393.1	1582.2

TABLE 3: PROCESSING (MILLIONS OF CONSTANT 1986 DOLLARS)

PROFIT AFTER TAX	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975
AGRICULTURE	994.3	1044.4	927.8	947.6	1138.4	1106.8	1233.0	1164.4	1429.2	1349.4	1192.5
FORESTRY	168.2	104.4	76.5	271.1	325.6	-72.1	30.0	271.2	782.3	225.3	19.0
MINERALS	1570.8	1261.3	1060.2	1235.1	604.0	606.6	681.3	534.8	740.6	1013.8	576.3
PETROLEUM	601.2	877.2	468.7	594.9	936.1	1067.7	1189.1	1362.4	1802.2	2117.0	1725.8
TOTAL RESOURCES PROCESSING	3334.6	3287.4	2533.2	3048.8	3004.0	2709.0	3133.5	3332.7	4754.3	4705.6	3513.6

TABLE 4: FABRICATING (MILLIONS OF CONSTANT 1986 DOLLARS)

PROFIT AFTER TAX	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975
FORESTRY	989.9	1032.2	671.7	597.1	871.2	504.8	202.2	195.6	1581.1	2036.9	1240.2
MINERALS	335.2	350.4	277.0	258.6	319.1	179.7	332.7	317.2	492.8	617.9	497.7
TOTAL RESOURCES FABRICATING	1325.1	1382.6	948.7	855.7	1190.3	684.5	535.0	512.8	2073.9	2654.8	1737.9

TABLE 5: TOTAL ACTIVITY (MILLIONS OF CONSTANT 1986 DOLLARS)

PROFIT AFTER TAX	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975
AGRICULTURE	1039.1	1101.8	989.2	1046.7	1249.0	1192.9	1291.2	1304.9	1780.5	1615.9	1396.8
FORESTRY	1228.0	1170.3	763.7	918.4	1247.3	499.9	273.0	502.9	2462.6	2322.5	1260.5
MINERALS	3394.5	3208.6	3060.7	3200.3	2768.9	2970.5	2438.6	1683.5	3906.4	4024.5	2656.3
PETROLEUM	1299.6	1586.9	1456.8	1676.2	1943.1	1683.4	2046.1	2208.4	3193.1	3464.5	3644.9
TOTAL RESOURCES TOTAL ACTIVITY	6961.2	7067.5	6270.3	6841.6	7208.3	6346.7	6048.9	5699.7	11342.6	11427.4	8958.6
TOTAL, ALL INDUSTRIES	17981.2	21532.0	20551.4	22145.3	22789.5	20386.7	24950.4	22363.8	30512.8	36946.6	32253.2

TABLE 6: MINERAL SECTOR (MILLIONS OF CONSTANT 1986 DOLLARS)

PROFIT AFTER TAX	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975
PRIMARY	1488.5	1596.8	1723.5	1706.5	1845.8	2184.3	1424.5	831.5	2673.0	2392.8	1582.4
PROCESSING	1570.8	1261.3	1060.2	1235.1	604.0	606.6	681.3	534.8	740.6	1013.8	576.3
FABRICATING	335.2	350.4	277.0	258.6	319.1	179.7	332.7	317.2	492.8	617.9	497.7
TOTAL MINERAL SECTOR	3394.5	3208.6	3060.7	3200.3	2768.9	2970.5	2438.6	1683.5	3906.4	4024.5	2656.3

									AVERAGE			C.O.V.		
1976	1977	1978	1979	1980	1981	1982	1983	1984	65-84	65-74	75-84	65-84	65-74	75-84
247.2	222.8	412.3	459.3	370.2	317.0	199.1	224.2	311.1	212.2	127.6	296.8	59.0	75.7	29.6
42.6	77.4	107.3	157.5	295.0	83.5	209.4	51.2	80.7	81.5	52.3	110.6	82.7	42.3	75.0
1464.9	1602.0	1997.4	3483.5	3815.0	2165.2	-60.8	271.0	-299.6	1694.4	1786.7	1602.1	58.6	27.9	81.6
2315.2	2951.3	3216.9	5110.1	5126.8	2532.4	2264.6	2225.2	3277.6	2024.0	954.1	3093.9	65.9	26.2	35.4
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4070.0	4853.5	5733.9	9210.3	9606.9	5098.1	2612.4	2771.6	3369.9	4012.1	2920.8	5103.4	51.4	26.4	46.1

									AVERAGE			C.O.V.		
1976	1977	1978	1979	1980	1981	1982	1983	1984	65-84	65-74	75-84	65-84	65-74	75-84
1002.4	1199.8	1563.8	2976.5	2774.9	1625.4	-156.2	210.1	-415.3	1375.1	1564.4	1185.8	61.8	30.8	90.2
264.2	274.9	236.1	358.7	457.6	372.6	14.7	12.9	-1.2	207.7	195.6	219.8	54.9	22.4	70.2
170.0	98.5	165.2	119.9	550.1	144.3	76.6	37.7	79.2	86.7	2.1	171.2	152.1	1258.7	82.1
28.6	28.8	32.3	28.4	32.2	23.0	4.2	10.3	37.6	24.9	24.6	25.3	34.7	29.9	38.7
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1465.1	1602.0	1997.4	3483.5	3814.8	2165.3	-60.7	271.0	-299.6	1694.4	1786.7	1602.1	58.6	27.9	81.6

									AVERAGE			C.O.V.		
1976	1977	1978	1979	1980	1981	1982	1983	1984	65-84	65-74	75-84	65-84	65-74	75-84
1437.6	1111.0	1405.0	1420.8	1317.0	1262.2	1268.2	1454.7	1438.7	1232.2	1133.5	1330.8	13.7	13.9	8.5
184.6	424.6	815.1	849.6	338.5	45.2	-218.3	182.3	139.8	248.2	218.3	278.1	112.3	101.5	116.3
304.0	599.5	1071.4	1275.7	1167.2	1032.8	-103.2	110.8	393.5	786.8	930.9	642.8	53.6	35.7	70.2
1810.7	1582.0	1652.7	2694.0	2694.5	2070.4	1243.9	384.4	1901.7	1438.8	1101.7	1776.0	46.4	46.1	35.9
------	------	------	------	------	------	------	------	------						
3736.8	3717.2	4944.2	6240.2	5517.3	4410.6	2190.7	2132.3	3873.8	3706.0	3384.3	4027.7	28.8	21.2	30.9

									AVERAGE			C.O.V.		
1976	1977	1978	1979	1980	1981	1982	1983	1984	65-84	65-74	75-84	65-84	65-74	75-84
675.9	565.6	1404.5	1412.4	2244.5	1944.0	31.7	35.2	764.9	950.1	868.3	1031.9	67.5	63.7	68.8
407.0	446.4	583.5	492.5	510.8	392.1	265.2	258.8	464.6	390.0	348.1	431.9	29.8	33.7	23.0
------	------	------	------	------	------	------	------	------						
1083.0	1012.0	1988.0	1904.9	2755.3	2336.0	296.8	294.0	1229.6	1340.0	1216.3	1463.7	54.6	53.8	53.4

									AVERAGE			C.O.V.		
1976	1977	1978	1979	1980	1981	1982	1983	1984	65-84	65-74	75-84	65-84	65-74	75-84
1684.8	1333.9	1817.3	1880.1	1687.2	1579.2	1467.4	1678.9	1749.8	1444.3	1261.1	1627.5	19.3	19.4	10.5
903.1	1067.6	2326.8	2419.5	2878.0	2072.7	22.8	268.7	985.5	1279.7	1138.9	1420.5	64.4	61.6	64.0
2175.9	2647.9	3652.4	5251.6	5492.9	3590.0	101.2	640.6	558.6	2871.2	3065.7	2676.8	47.2	21.1	66.7
4125.9	4533.3	4869.6	7804.1	7821.3	4602.8	3508.6	2609.6	5179.3	3462.9	2055.8	4870.0	54.4	33.5	33.5
------	------	------	------	------	------	------	------	------						
8889.8	9582.7	12666.1	17355.4	17879.5	11844.7	5099.9	5197.8	8473.2	9058.1	7521.4	10594.8	39.9	26.4	39.5
31950.5	31690.2	40313.4	50522.9	50169.0	44784.2	26791.1	31978.4	45153.4	31287.3	24016.0	38558.6	32.1	22.3	21.3

									AVERAGE			C.O.V.		
1976	1977	1978	1979	1980	1981	1982	1983	1984	65-84	65-74	75-84	65-84	65-74	75-84
1464.9	1602.0	1997.4	3483.5	3815.0	2165.2	-60.8	271.0	-299.6	1694.4	1786.7	1602.1	58.6	27.9	81.6
304.0	599.5	1071.4	1275.7	1167.2	1032.8	-103.2	110.8	393.5	786.8	930.9	642.8	53.6	35.7	70.2
407.0	446.4	583.5	492.5	510.8	392.1	265.2	258.8	464.6	390.0	348.1	431.9	29.8	33.7	23.0
------	------	------	------	------	------	------	------	------						
2175.9	2647.9	3652.4	5251.6	5492.9	3590.0	101.2	640.6	558.6	2871.2	3065.7	2676.8	47.2	21.1	66.7

Income Taxes

This section examines the income taxes paid by each resource industry. Both income taxes paid and income tax rates are calculated. Income tax volumes are expressed in constant (1986) and current dollar terms and serve as a measure of the absolute contribution to tax revenues that each industry makes. Tax rates, on the other hand, serve as a guide to the relative contribution made by each industry, regardless of its size.

It should be stressed that the tax statistics quoted here are for income taxes (federal and provincial combined) only. No attempt has been made to incorporate mining and logging taxes or royalties of any sort into the tax figures. The reader is cautioned, therefore, from using these numbers as a proxy for the total tax burden facing each industry. Royalties and logging and mining taxes vary substantially among industries and hence could significantly alter the relative positions with respect to total taxes paid.

Income Tax Volumes

Income tax volumes for the primary stage of activity are illustrated in figures 109 and 110. Mining and petroleum pay by far the most taxes in absolute dollars. For example, in 1980 mining paid 768 million current dollars in income taxes, and petroleum paid 1.14 billion. Compare these figures to the income taxes paid by forestry (50 million) and agriculture (74 million). Petroleum's income taxes increase steadily through to 1984, reaching a level of 2.6 billion in that year (not shown). Taxes, of course, increase roughly in proportion to profits and the steady decline in taxes paid by the mining industry since 1980 is yet another indication of the hard times the mineral industry has experienced in the eighties. In constant 1986 dollars, the average annual taxes paid by each industry are: petroleum, 1.43 billion dollars; mining, 462 million dollars; agriculture, 82.6 million dollars; and finally forestry, 35.3 million dollars. Income taxes paid by the four resource industries combined make up slightly more than 15 percent of the total (corporate) income taxes collected in Canada.

Income taxes paid by the various subcomponents of the mining industry are shown in figures 111 and 112. Metal mining pays far and away the largest share, while quarries average the least. Taxes paid in metal mining vary tremendously according to the cycles experienced within the industry. The "booms" in 1973-75 and again in the 1979-80 period show up in the large increases in taxes paid in those years.

Figures 113 and 114 show the processing stage. Here petroleum and agriculture pay the most income taxes. While in current dollars agriculture's taxes have been increasing, in constant dollars they have actually been decreasing since 1972. The constant dollar annual averages are: petroleum, 639.2 million; agriculture, with 671.2 million; forestry, 182 million; and minerals at 171 million dollars per year. Petroleum's tax payments have dipped since 1980 due to falling profits. This is in contrast to petroleum in the primary stage, which earned rising profits through to 1984.

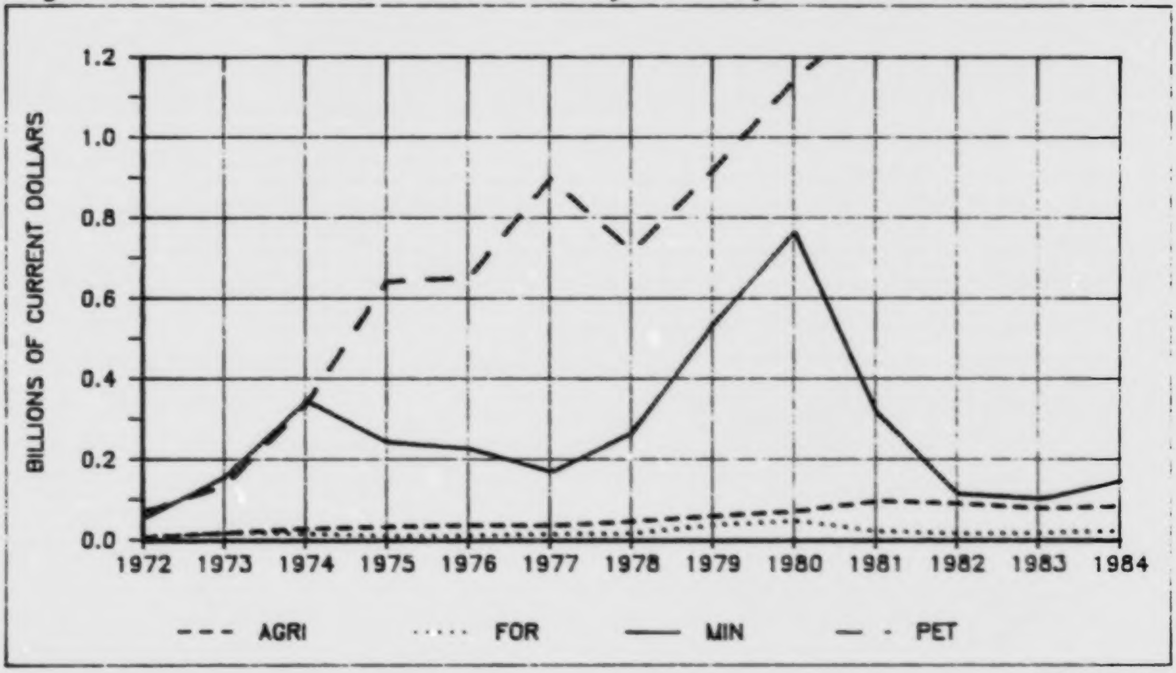
In the fabricating stage (figures 115, 116), forestry pays the most income taxes. As was the case for mining in the primary stage or petroleum in the processing stage, the amount of taxes paid by forestry varies according to the peaks and valleys of economic cycles. In constant dollar average yearly taxes, forestry, at 372.4 million dollars, paid over twice that of minerals (169.3 million dollars).

Taxes paid for total activity are shown in figures 117 and 118. It is petroleum which, overall, pays the greatest amount of income taxes, with a constant dollar annual average of 2.07 billion dollars. The mineral industry pays the second highest average tax bill at 803 million constant dollars a year, with agriculture following with an average annual tax burden of 754 million dollars, and forestry paying the least, with an average of only 590 million. Resources combined to make up just over 30 percent of the total corporate income taxes paid to the federal and provincial governments.

The taxes paid by the three stages of activity in the mineral industry are shown in figures 119 and 120. As can be seen, it is the primary stage which has the highest income tax burden. The cyclical pattern in primary activity is only slightly evident in the other two stages.

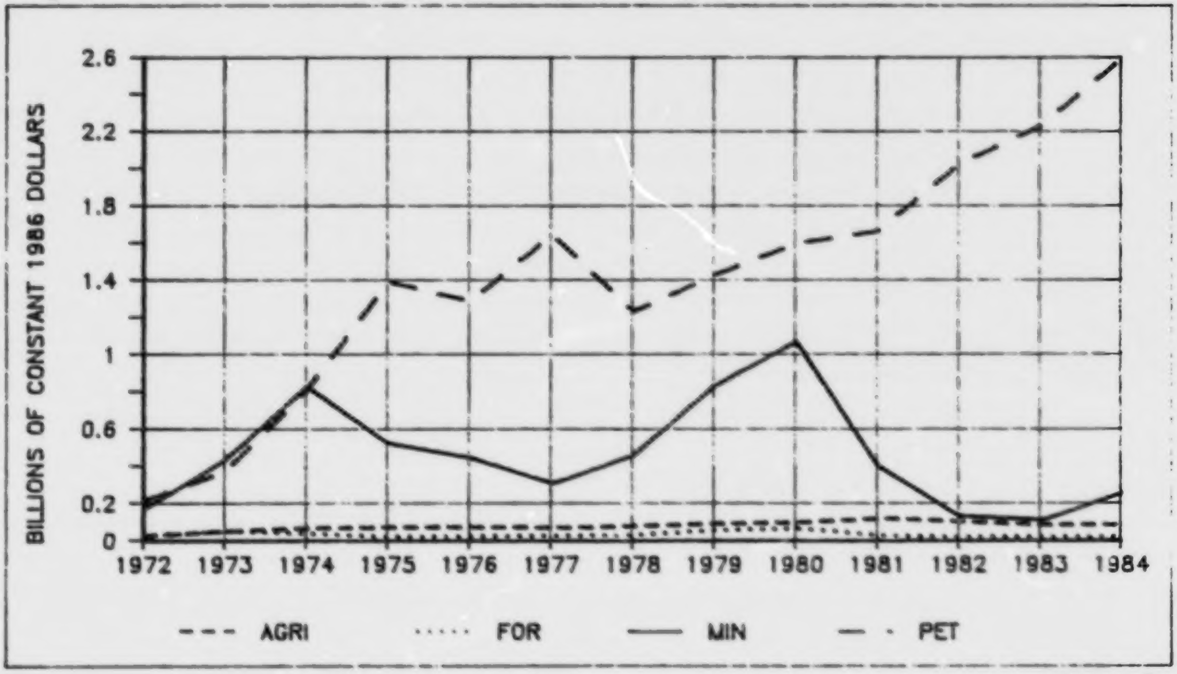
TAX VOLUMES: Primary Activity

Figure 109. Tax Volumes, Primary Activity, Current Dollars



(ref: table Q1)

Figure 110. Tax Volumes, Primary Activity, Constant 1986 Dollars

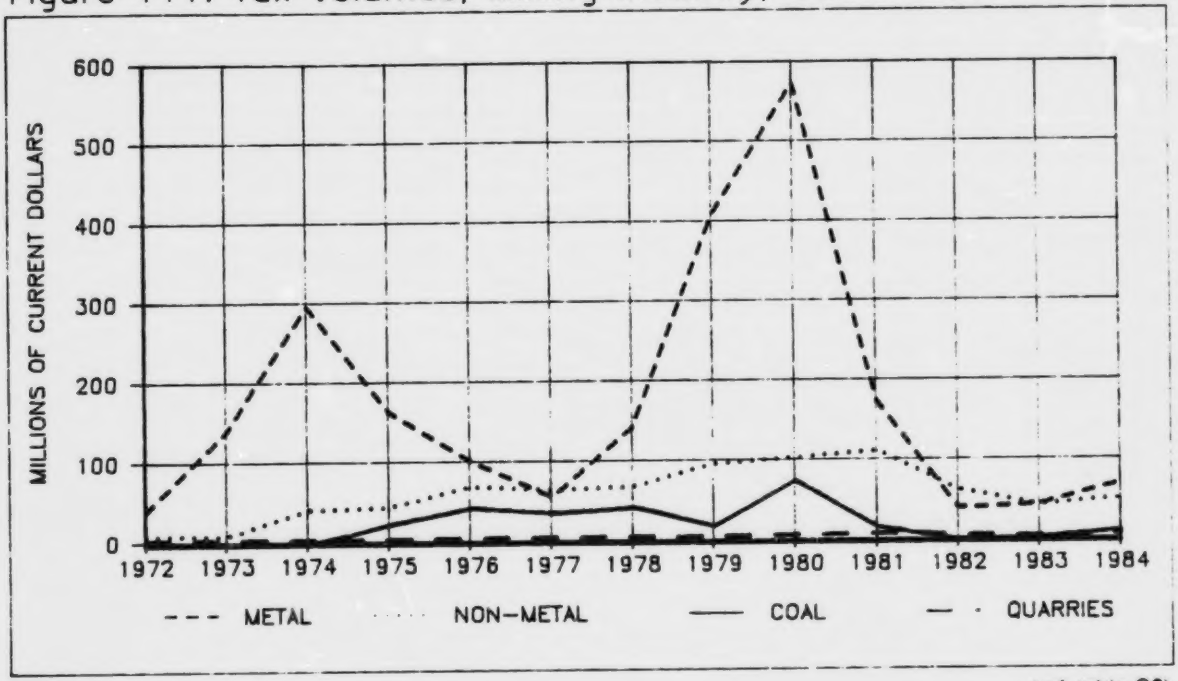


(ref: table R1)

Source: Statistics Canada, Catalogue 61–208.
Constant Dollars Derived Using G.N.E. Deflator

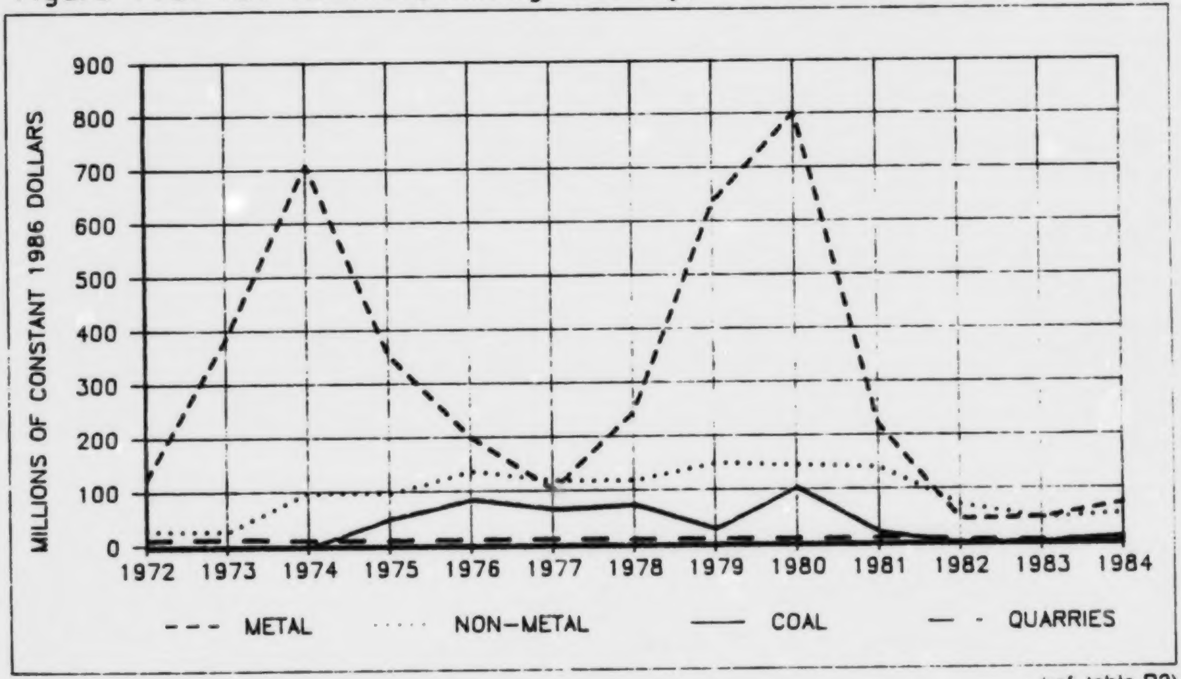
TAX VOLUMES: Mining Industry

Figure 111. Tax Volumes, Mining Industry, Current Dollars



(ref: table Q2)

Figure 112. Tax Volumes, Mining Industry, Constant 1986 Dollars

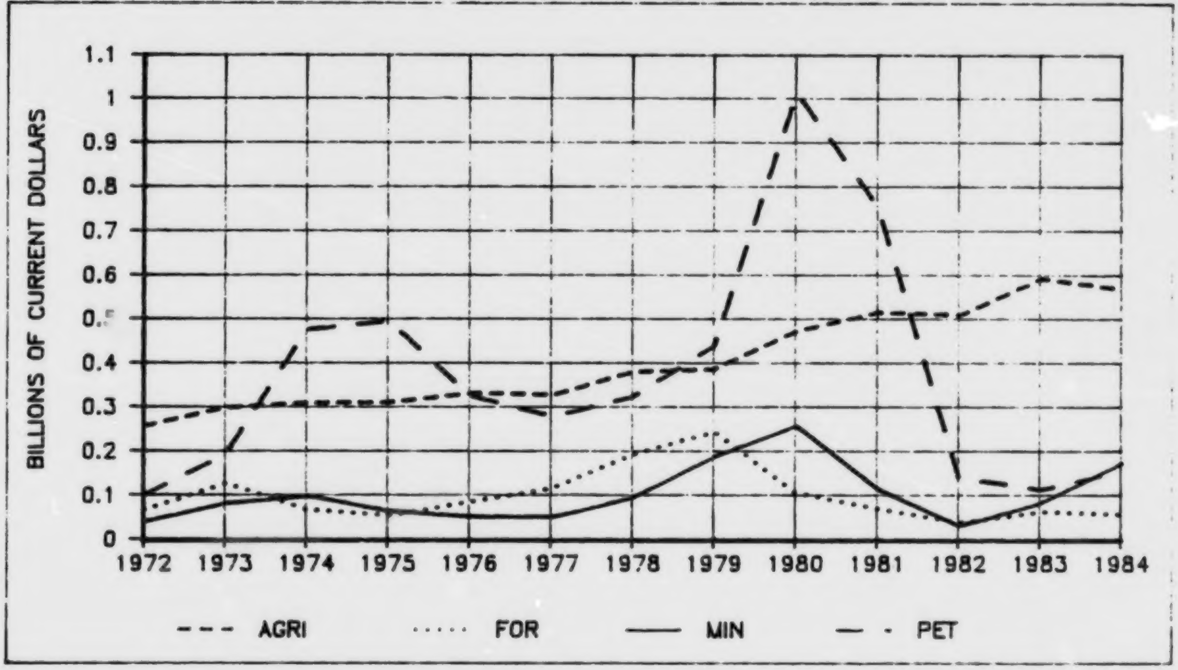


(ref: table R2)

Source: Statistics Canada, Catalogue 61-208.
Constant Dollars Derived Using G.N.E. Deflator

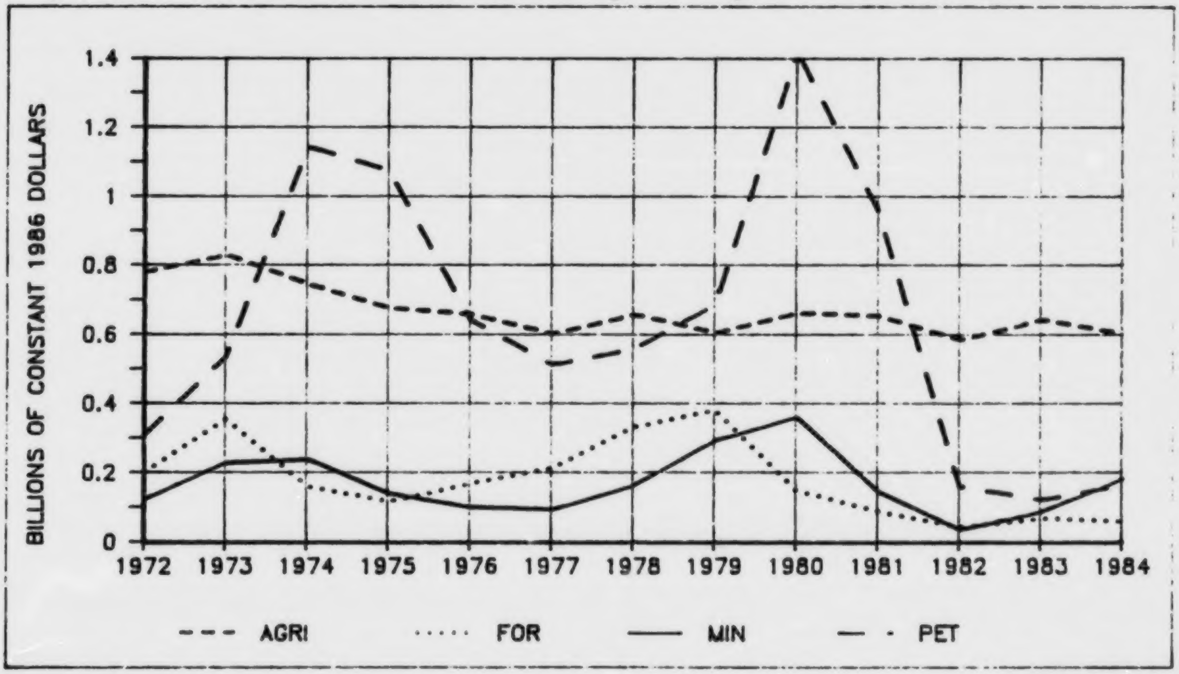
TAX VOLUMES: Processing Activity

Figure 113. Tax Volumes, Processing Activity, Current Dollars



(ref: table Q3)

Figure 114. Tax Volumes, Processing Activity, Constant 1986 Dollars

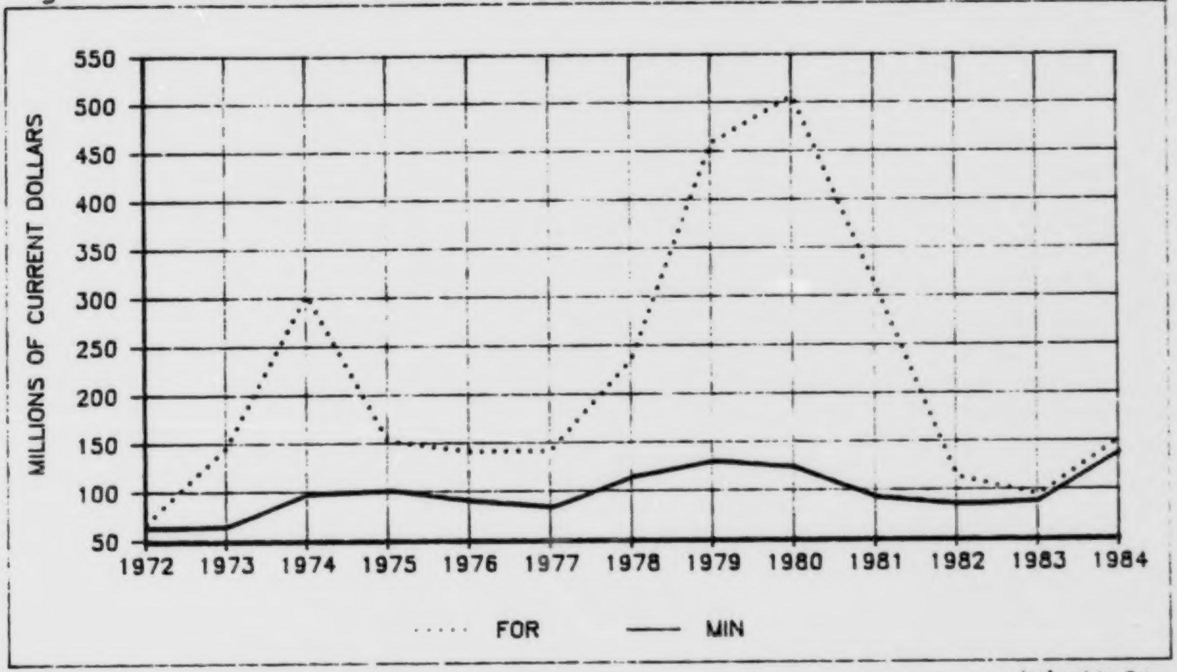


(ref: table R3)

Source: Statistics Canada, Catalogue 61-208.
Constant Dollars Derived Using G.N.E. Deflator

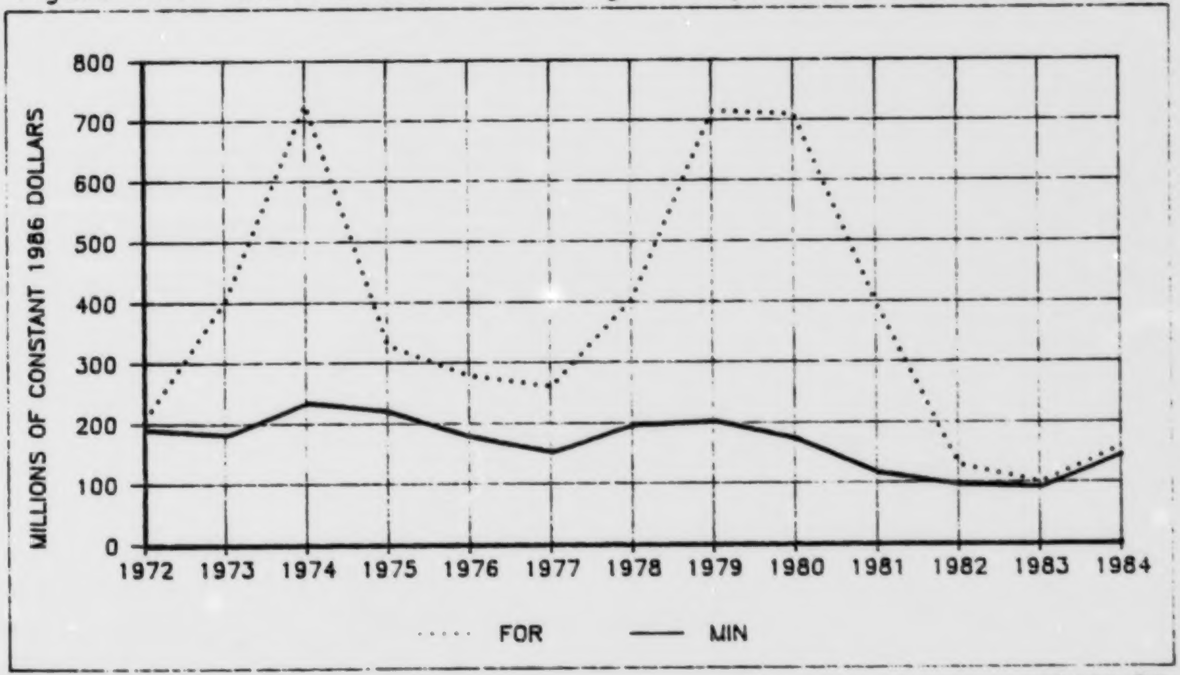
TAX VOLUMES: Fabricating Activity

Figure 115. Tax Volumes, Fabricating Activity, Current Dollars



(ref: table Q4)

Figure 116. Tax Volumes, Fabricating Activity, Constant 1986 Dollars

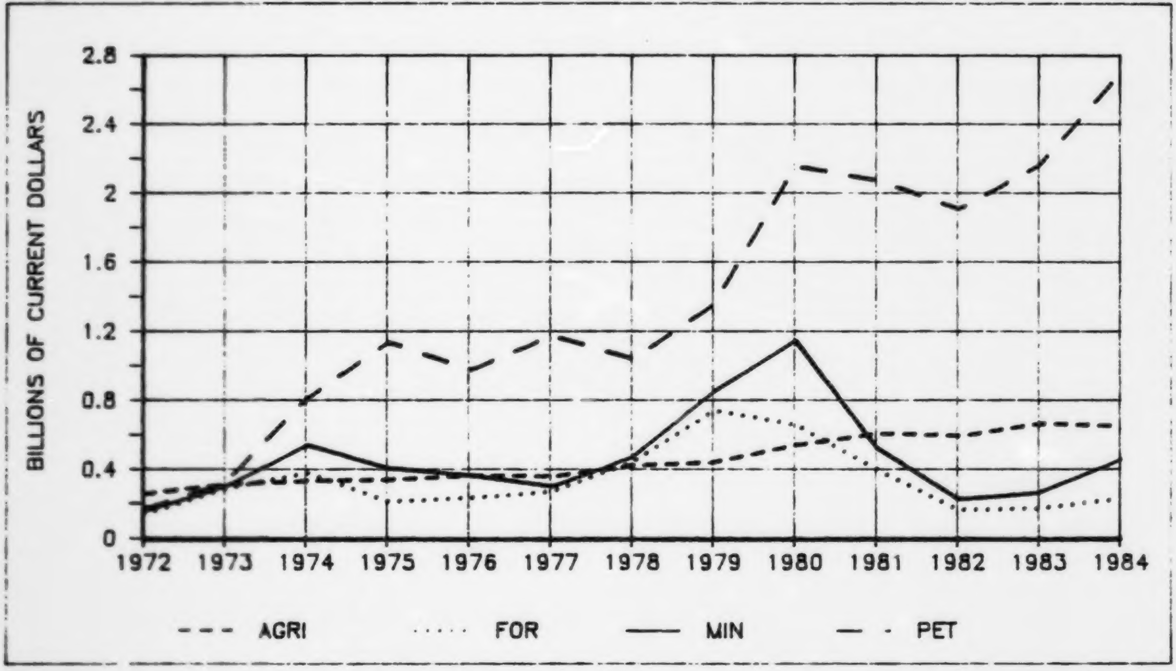


(ref: table R4)

Source: Statistics Canada, Catalogue 61–208.
Constant Dollars Derived Using G.N.E. Deflator

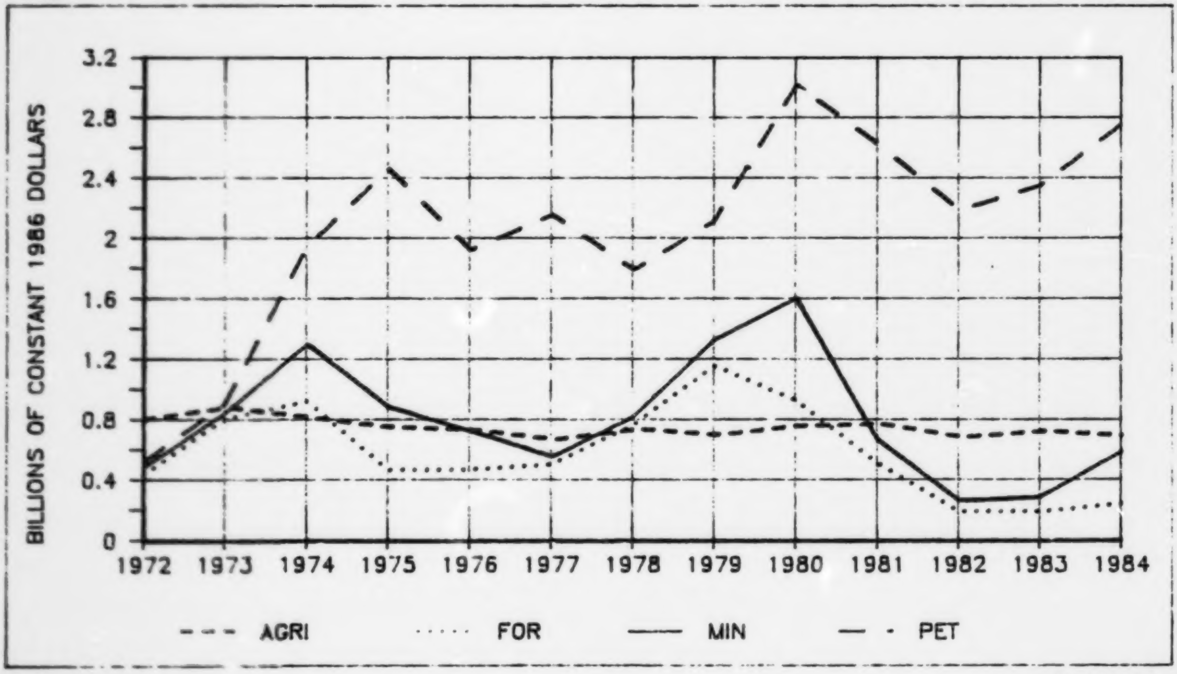
TAX VOLUMES: Total Activity

Figure 117. Tax Volumes, Total Activity, Current Dollars



(ref: table Q5)

Figure 118. Tax Volumes, Total Activity, Constant 1986 Dollars

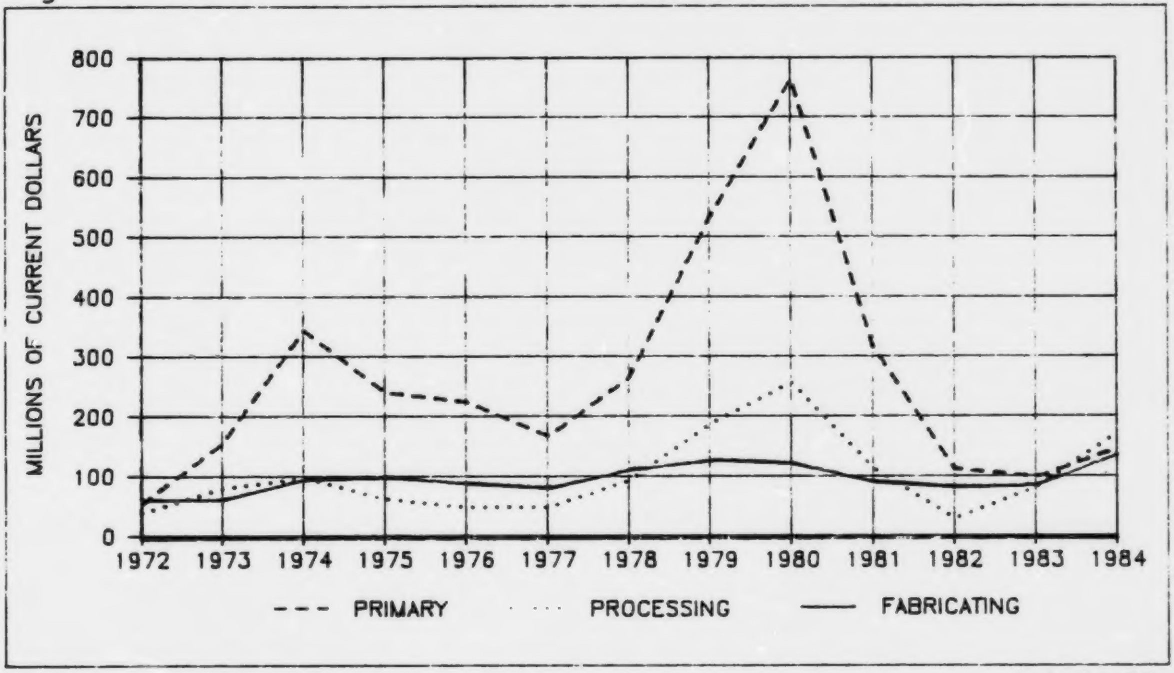


(ref: table R5)

Source: Statistics Canada, Catalogue 61–208.
Constant Dollars Derived Using G.N.E. Deflator

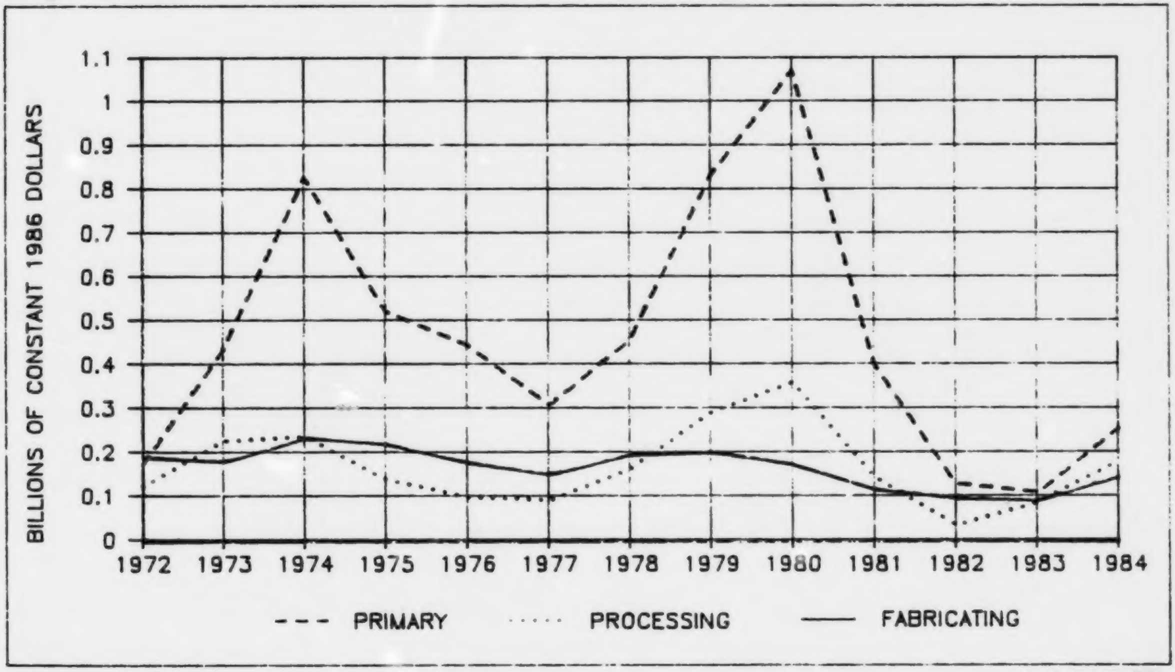
TAX VOLUMES: Mineral Sector

Figure 119. Tax Volumes, Mineral Sector, Current Dollars



(ref: table Q6)

Figure 120. Tax Volumes, Mineral Sector, Constant 1986 Dollars



(ref: table R6)

Source: Statistics Canada, Catalogue 61–208.
Constant Dollars Derived Using G.N.E. Deflator

Table Q

TABLE 1: PRIMARY (MILLIONS OF CURRENT DOLLARS)

INCOME TAX	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984
AGRICULTURE	10.0	20.1	30.8	35.7	39.3	38.7	49.2	61.8	74.0	98.5	90.1	77.9	86.8
FORESTRY	10.4	19.4	16.0	9.9	12.9	17.1	18.3	39.1	50.1	22.2	16.1	19.4	24.7
MINERALS	58.3	159.5	347.2	242.6	227.0	169.8	268.9	537.0	767.7	319.1	114.8	102.3	149.6
PETROLEUM	73.1	137.3	339.2	644.9	654.1	899.9	717.9	920.0	1144.9	1320.8	1770.7	2055.6	2547.4
TOTAL RESOURCES PRIM.	151.8	336.3	733.2	933.1	933.3	1125.5	1054.3	1557.9	2036.7	1760.6	1991.7	2255.2	2808.5

TABLE 2: MINING INDUSTRY (MILLIONS OF CURRENT DOLLARS)

INCOME TAX	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984
METAL MINES	42.4	141.5	298.3	165.5	103.4	57.9	145.4	411.1	575.8	176.5	41.6	46.4	73.1
NON-METAL MINES	10.6	11.2	43.2	46.5	71.7	66.9	71.2	98.7	106.1	114.3	64.6	45.2	53.8
COAL MINES	0.2	0.5	0.3	24.7	44.8	37.5	45.0	19.4	77.1	18.0	1.2	4.7	13.4
QUARRIES	5.2	6.2	5.3	5.8	7.1	7.5	7.3	7.9	8.7	10.3	7.4	6.1	9.3
TOTAL MINING	58.4	159.4	347.1	242.5	227.0	169.8	268.9	537.1	767.7	319.1	114.8	102.4	149.6

TABLE 3: PROCESSING (MILLIONS OF CURRENT DOLLARS)

INCOME TAX	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984
AGRICULTURE	260.2	302.0	312.4	313.5	334.4	329.3	383.8	389.3	475.0	518.0	511.3	594.8	569.9
FORESTRY	67.8	129.1	67.7	54.8	87.1	118.0	194.9	246.8	107.2	70.9	39.4	65.4	57.8
MINERALS	42.1	84.1	100.8	65.7	51.4	51.7	97.0	190.1	260.1	116.2	32.7	85.5	175.3
PETROLEUM	103.4	195.0	478.8	498.2	326.3	280.5	326.3	442.6	1015.6	755.8	140.8	114.7	158.6
TOTAL RESOURCES PROC.	473.5	710.2	959.7	932.2	799.2	779.5	1002.0	1268.8	1857.9	1460.9	724.2	860.4	961.6

TABLE 4: FABRICATING (MILLIONS OF CURRENT DOLLARS)

INCOME TAX	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984
FORESTRY	69.3	146.8	304.9	153.2	142.1	142.9	236.9	459.5	507.8	312.8	114.2	95.4	152.7
MINERALS	64.0	66.1	99.1	102.6	91.0	83.6	115.7	131.4	124.5	93.0	85.0	89.3	140.0
TOTAL RESOURCES FABR.	133.3	212.9	404.0	255.8	233.1	226.5	352.6	590.9	632.3	405.8	199.2	184.7	292.7

TABLE 5: TOTAL ACTIVITY (MILLIONS OF CURRENT DOLLARS)

INCOME TAX	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984
AGRICULTURE	270.2	322.1	343.2	349.2	373.7	368.0	433.0	451.1	549.0	616.5	601.4	672.7	656.7
FORESTRY	147.5	295.3	388.6	217.9	242.1	278.0	450.1	745.4	665.1	405.9	169.7	180.2	235.2
MINERALS	164.4	309.7	547.1	410.9	369.4	305.1	481.6	858.5	1152.3	528.3	232.5	277.1	464.9
PETROLEUM	176.5	332.3	818.0	1143.1	980.4	1180.4	1044.2	1362.6	2160.5	2076.6	1911.5	2170.3	2706.0
TOTAL RESOURCES	758.6	1259.4	2096.9	2121.1	1965.6	2131.5	2408.9	3417.6	4526.9	3627.3	2915.1	3300.3	4062.8
TOTAL, ALL INDUSTRIES	3683.3	4766.0	6558.5	7006.5	6763.8	6705.1	7572.5	9402.6	11413.6	11370.1	9682.9	10569.5	12536.8

TABLE 6: MINERAL SECTOR (MILLIONS OF CURRENT DOLLARS)

INCOME TAX	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984
PRIMARY	58.3	159.5	347.2	242.6	227.0	169.8	268.9	537.0	767.7	319.1	114.8	102.3	149.6
PROCESSING	42.1	84.1	100.8	65.7	51.4	51.7	97.0	190.1	260.1	116.2	32.7	85.5	175.3
FABRICATING	64.0	66.1	99.1	102.6	91.0	83.6	115.7	131.4	124.5	93.0	85.0	89.3	140.0
TOTAL MINERAL SECTOR	164.4	309.7	547.1	410.9	369.4	305.1	481.6	858.5	1152.3	528.3	232.5	277.1	464.9

Table R

TABLE 1: PRIMARY ACTIVITY

INCOME TAX (1986 CONSTANT $, MILLIONS)	1972	1973	1974	1975	1976	1977	1978	1979	1980
AGRICULTURE	30.1	55.4	73.7	77.1	77.4	71.0	84.6	96.3	103.6
FORESTRY	31.3	53.5	38.3	21.4	25.4	31.4	31.5	61.0	70.1
MINERALS	175.5	439.8	830.5	524.0	447.2	311.4	462.3	837.2	1074.4
PETROLEUM	220.0	378.6	811.4	1392.9	1288.6	1650.4	1234.3	1434.2	1602.3
TOTAL RESOURCES PRIMARY	456.8	927.3	1753.9	2015.4	1838.7	2064.2	1812.6	2428.7	2850.3

TABLE 2: MINING INDUSTRY

INCOME TAX (1986 CONSTANT $, MILLIONS)	1972	1973	1974	1975	1976	1977	1978	1979	1980
METAL MINES	127.6	390.2	713.6	357.5	203.7	106.2	250.0	640.9	805.8
NON-METAL MINES	31.9	30.9	103.3	100.4	141.3	122.7	122.4	153.9	148.5
COAL MINES	0.6	1.4	0.7	53.4	88.3	68.8	77.4	30.2	107.9
QUARRIES	15.6	17.1	12.7	12.5	14.0	13.8	12.6	12.3	12.2
TOTAL MINING	175.8	439.5	830.3	523.8	447.2	311.4	462.3	837.3	1074.4

TABLE 3: PROCESSING

INCOME TAX (1986 CONSTANT $, MILLIONS)	1972	1973	1974	1975	1976	1977	1978	1979	1980
AGRICULTURE	783.1	832.7	747.3	677.1	658.8	603.9	659.9	606.9	664.7
FORESTRY	204.0	356.0	161.9	118.4	171.6	216.4	335.1	384.7	150.0
MINERALS	126.7	231.9	241.1	141.9	101.3	94.8	166.8	296.4	364.0
PETROLEUM	311.2	537.7	1145.4	1076.1	642.8	514.4	561.0	690.0	1421.3
TOTAL RESOURCES PROCESSING	1425.0	1958.3	2295.7	2013.5	1574.5	1429.6	1722.7	1978.0	2600.1

TABLE 4: FABRICATING

INCOME TAX (1986 CONSTANT $, MILLIONS)	1972	1973	1974	1975	1976	1977	1978	1979	1980
FORESTRY	208.6	404.8	729.4	330.9	279.9	262.1	407.3	716.3	710.7
MINERALS	192.6	182.3	237.1	221.6	179.3	153.3	198.9	204.8	174.2
TOTAL RESOURCES FABRICATING	401.2	587.1	966.4	552.5	459.2	415.4	606.2	921.2	884.9

TABLE 5: TOTAL ACTIVITY

INCOME TAX (1986 CONSTANT $, MILLIONS)	1972	1973	1974	1975	1976	1977	1978	1979	1980
AGRICULTURE	813.2	888.2	821.0	754.3	736.2	674.9	744.4	703.2	768.3
FORESTRY	443.9	814.3	929.6	470.7	477.0	509.9	773.8	1162.0	930.8
MINERALS	494.8	854.0	1308.7	887.5	727.7	559.6	828.0	1338.4	1612.6
PETROLEUM	531.2	916.3	1956.8	2469.0	1931.5	2164.9	1795.3	2124.2	3023.6
TOTAL RESOURCES TOTAL ACTIVITY	2283.0	3472.7	5016.1	4581.5	3872.4	3909.2	4141.5	5327.9	6335.3
TOTAL, ALL INDUSTRIES	11085.0	13141.8	15688.8	15133.7	13325.2	12297.2	13019.1	14658.2	15973.0

TABLE 6: MINERAL SECTOR

INCOME TAX (1986 CONSTANT $, MILLIONS)	1972	1973	1974	1975	1976	1977	1978	1979	1980
PRIMARY	175.5	439.8	830.5	524.0	447.2	311.4	462.3	837.2	1074.4
PROCESSING	126.7	231.9	241.1	141.9	101.3	94.8	166.8	296.4	364.0
FABRICATING	192.6	182.3	237.1	221.6	179.3	153.3	198.9	204.8	174.2
TOTAL MINERAL SECTOR	494.8	854.0	1308.7	887.5	727.7	559.6	828.0	1338.4	1612.6

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    1981    1982    1983    1984 AVERAGE  C.O.V.

   124.7   103.3    84.2    92.0    82.6    27.5
    28.1    18.5    22.2    26.2    35.3    44.0
   403.8   131.7   111.7   260.3   462.3    61.1
  1671.5  2031.0  2235.0  2596.8  1426.7    45.7
  ------  ------  ------  ------  ------   -----
  2228.1  2284.5  2453.1  2975.1  2006.8    33.4
------------------------------------------------

    1981    1982    1983    1984 AVERAGE  C.O.V.

   223.4    47.7    50.5    77.4   307.3    81.4
   144.6    74.1    49.2    57.0    98.5    44.0
    22.8     1.4     5.1    14.2    36.3   101.1
    13.0     8.5     7.0     9.9    12.4    21.1
  ------  ------  ------  ------  ------   -----
   403.8   131.7   111.9   158.5   454.4    63.6
------------------------------------------------

    1981    1982    1983    1984 AVERAGE  C.O.V.

   655.5   586.5   645.1   603.7   671.2    10.6
    89.7    45.2    71.0    61.2   182.0    60.2
   147.1    37.5    90.5   185.7   171.2    51.3
   956.5   161.5   124.3   168.0   639.2    61.6
  ------  ------  ------  ------  ------   -----
  1848.8   830.7   930.9  1018.7  1663.6    30.7
------------------------------------------------

    1981    1982    1983    1984 AVERAGE  C.O.V.

   395.9   131.0   102.1   161.8   372.4    57.1
   117.7    97.5    93.5   148.3   169.3    25.7
  ------  ------  ------  ------  ------   -----
   513.5   228.5   195.5   310.1   541.7    44.7
------------------------------------------------

    1981    1982    1983    1984 AVERAGE  C.O.V.

   780.2   689.8   729.3   695.7   753.7     7.7
   513.7   194.6   195.3   249.2   589.6    50.0
   668.6   266.7   295.6   594.3   802.8    48.5
  2626.0  2192.5  2359.3  2764.8  2065.9    32.3
  ------  ------  ------  ------  ------   -----
  4590.4  3343.6  3579.5  4303.9  4212.1    23.1

 14389.1 11106.3 11437.9 13280.7 13425.8    11.9
------------------------------------------------

    1981    1982    1983    1984 AVERAGE  C.O.V.

   403.8   131.7   111.7   260.3   462.3    61.1
   147.1    37.5    90.5   185.7   171.2    51.3
   117.7    97.5    93.5   148.3   169.3    25.7
  ------  ------  ------  ------  ------   -----
   668.6   266.7   295.6   594.3   802.8    48.5
------------------------------------------------
```

Effective Income Tax Rates

The next statistic examined is effective income tax rates. This is the ratio of total income taxes paid (examined in the preceding section) to net profits before direct taxes as defined by Statistics Canada and examined in section 4.1. Effective tax rates differ from nominal rates in that the latter are generally based on taxable income (versus net profits), and so will be more affected by the current tax regime.

The income tax rates calculated below are quite volatile, at times exceeding 100 percent and at other times being negative. These extremes are possible because firms can deduct, in computing taxable income, intangible exploration and development costs which exceed the book amortization amounts, and may claim capital cost allowances in excess of book depreciation. Also, loss carry-overs may be used to minimize the tax liability of a given year. Because of this problem tax rates at times became undefined, as when a positive tax was paid on a negative book profit in a given year. This situation could arise in a year when book write-offs (depreciation) exceed allowable tax deductions. This problem occurred most frequently in the early eighties and so, when calculating average tax rates for the period as a whole, only the years 1972-81 were included.

Figure 121 depicts income tax rates in the primary stage of activity. The problem of volatility is obvious here, with the tax rate for forestry reaching 118 percent in 1975. The tax rate for mining in 1982 was undefined for the reason cited above. For the 1972-81 period, mining faced the lowest effective income tax rate of the four resource industries, at 15.9 percent. This compared with averages of 21.2 percent for agriculture and 25.9 percent for petroleum. Forestry paid the highest average rate at 38.4 percent. As can be seen in figure 121, mining's income rate was also the least volatile. Once again, the reader is reminded that these numbers refer to income taxes only.

The tax rates for the sub-industries of mining are shown in figure 122. It is perhaps surprising that metal mining enjoys the lowest income tax rates, despite being the most profitable sector as noted in section 4.1. The average rates for the 1972-81 period were as follows: metal mining, 13.6 percent; non-metals, 23.6 percent; coal mining, 15.8 percent; quarries, 30.4 percent. Once again the volatility problem associated with the early eighties is apparent.

The mineral industry also enjoys the lowest average income tax rate in the processing stage (figure 123) at 16.7 percent. Forestry once more faces the highest average rate (44.7 percent), with petroleum at 23.8 percent and agriculture at 32.8 percent. Minerals was the only industry to have a tax rate significantly below that of the economy-wide average of 25.8 percent. All industries except forestry show a moderate declining trend in their tax rates, as does the economy-wide average.

Minerals and forestry show nearly identical income tax rates in the fabricating stage. The overall average is 25.3 percent for minerals and 24.3 percent for forestry. The rates are also fairly stable over time, except in 1972 and again in the post 1981 period.

The rates for total activity are shown in figure 125. The mineral industry has the lowest income tax rate over the 1972-81 period at 17.5 percent. Agriculture faces the highest rate at 31.1

percent, forestry drops to second at 25.9 percent[12] and petroleum pays a 25.0 percent rate. Both forestry and minerals suffered losses in 1982 and so had undefined tax rates. In 1983 the tax rate for forestry was 70.7 percent and for minerals was 51.8 percent (not shown).

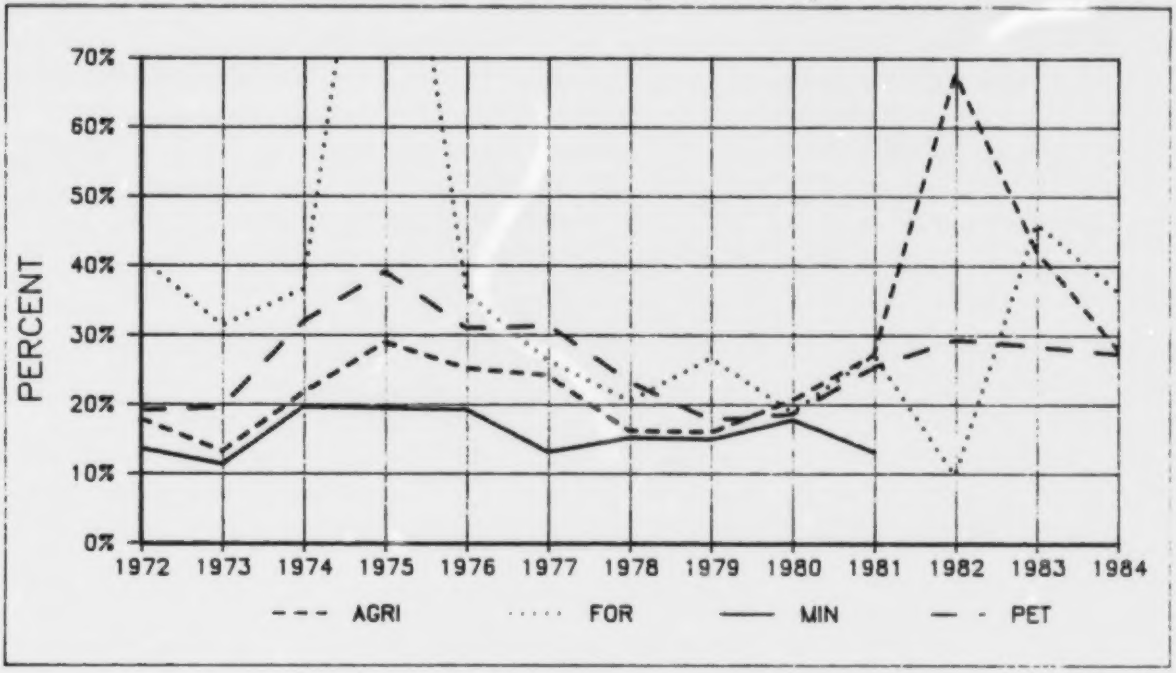
The rates for the three stages of the mineral industry are depicted in figure 126. Fabricating pays the highest rates, near the economy average, while primary pays the lowest rate, followed closely by processing.

---

[12] Because most of the profits and taxes generated by forestry takes place in the fabricating stage, especially in pulp and paper, the weight of this stage is enough to drop the average tax rate below that of agriculture.

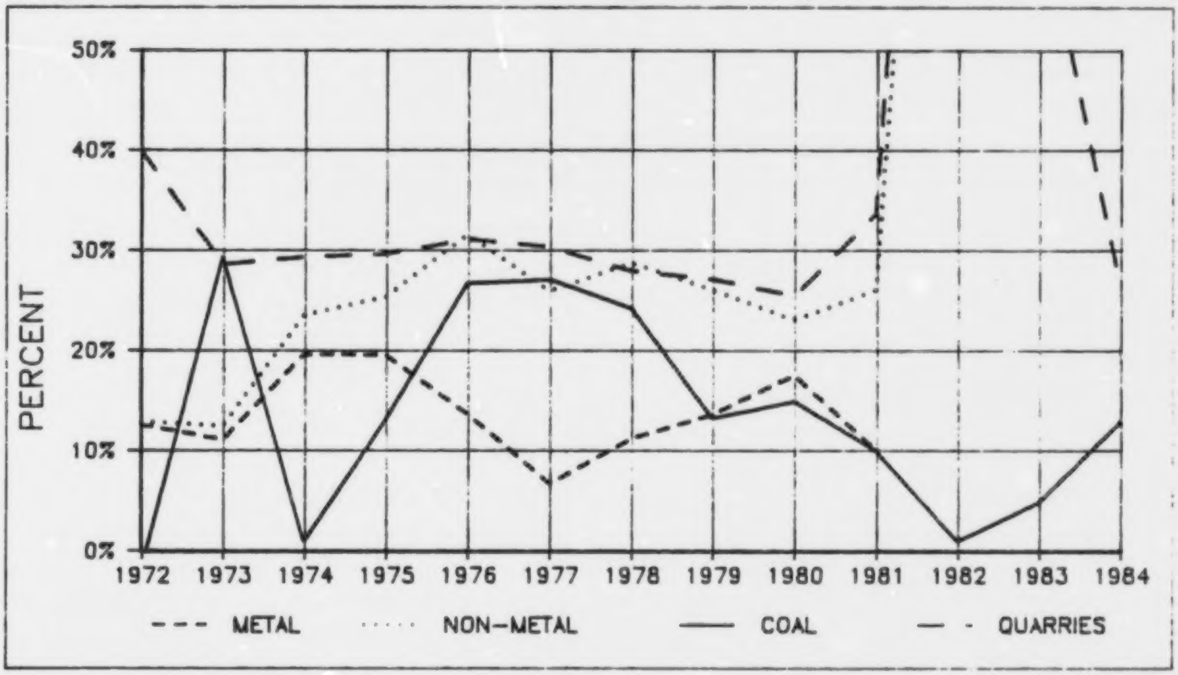
TAX RATES: Primary Activity, Mining Industry

Figure 121. Tax Rates, Primary Activity, Percent



(ref: table S1)

Figure 122. Tax Rates, Mining Industry, Percent

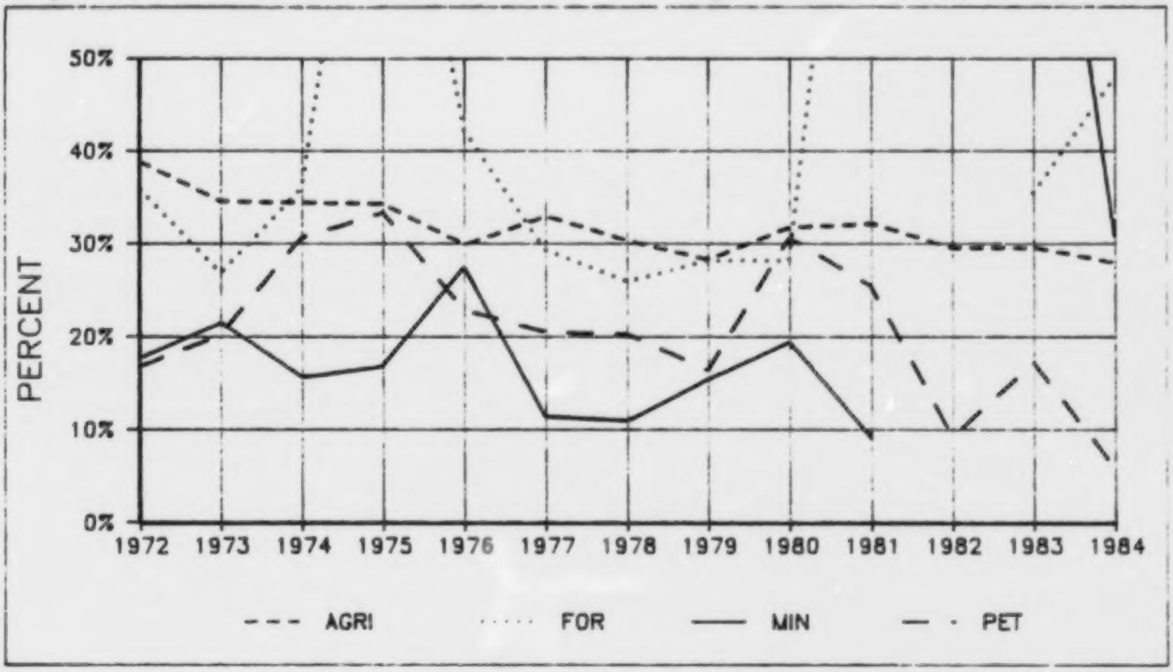


(ref: table S2)

Source: Statistics Canada, Catalogue 61-207, 61-208.

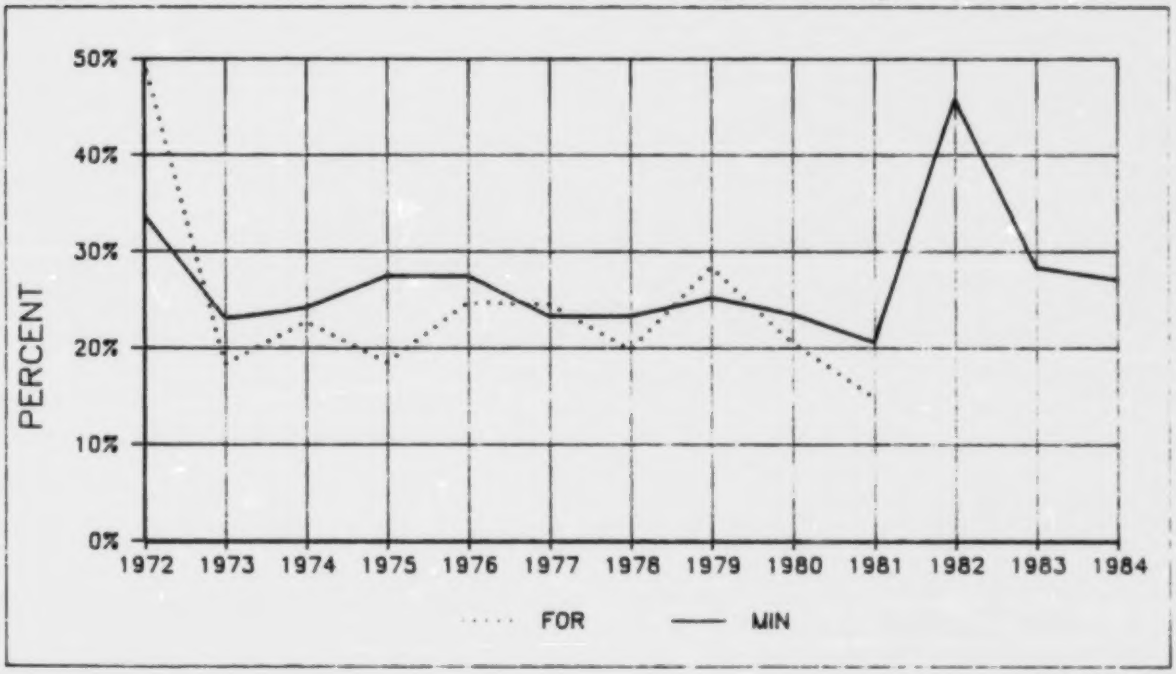
TAX RATES: Processing and Fabricating Activity

Figure 123. Tax Rates, Processing Activity, Percent



(ref: table S3)

Figure 124. Tax Rates, Fabricating Activity, Percent

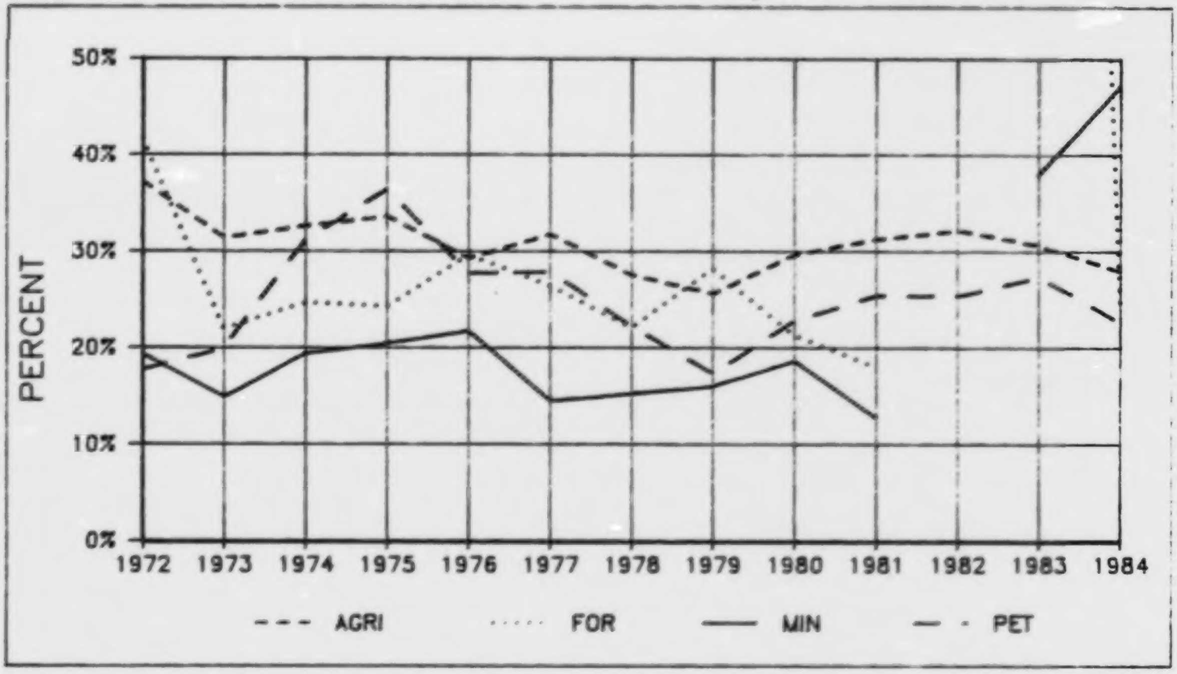


(ref: table S4)

Source: Statistics Canada, Catalogue 61-207, 61-208.

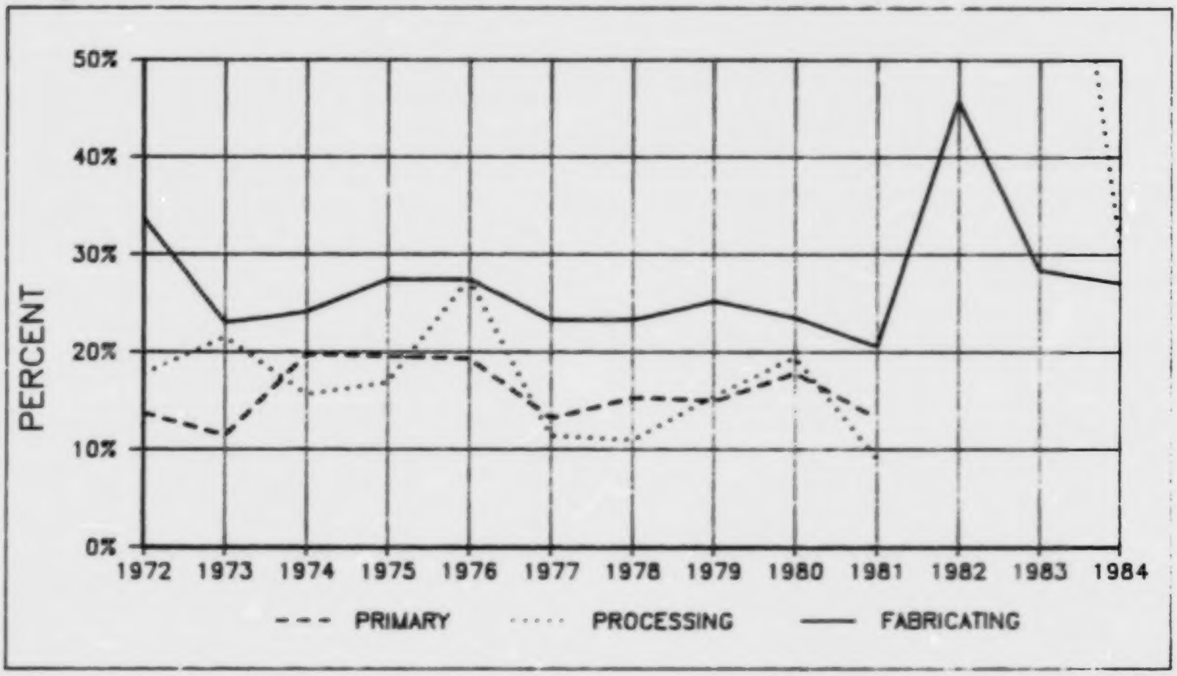
TAX RATES: Total Activity and Mineral Sector

Figure 125. Tax Rates, Total Activity, Percent



(ref: table S5)

Figure 126. Tax Rates, Mineral Sector, Percent



(ref: table S6)

Source: Statistics Canada, Catalogue 61–207, 61–208.

Table S

TABLE 1: PRIMARY ACTIVITY

INCOME TAX RATES	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981
AGRICULTURE	18.05%	13.36%	21.89%	29.10%	25.29%	24.28%	16.24%	16.12%	20.80%	27.33%
FORESTRY	41.27%	31.49%	36.78%	117.86%	36.24%	26.39%	20.63%	26.84%	18.98%	27.34%
MINERALS	13.85%	11.51%	19.89%	19.63%	19.39%	13.33%	15.42%	15.10%	17.95%	13.28%
PETROLEUM	19.37%	19.77%	32.11%	39.31%	31.11%	31.59%	23.34%	17.93%	18.78%	25.57%
TOTAL RESOURCES PRIMARY	17.27%	14.67%	24.55%	31.03%	26.94%	25.89%	20.23%	16.90%	18.53%	21.98%

TABLE 2: MINING INDUSTRY

INCOME TAX RATES	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981
METAL MINES	12.65%	11.12%	19.73%	19.57%	13.71%	6.78%	11.32%	13.69%	17.62%	10.06%
NON-METAL MINES	12.94%	12.49%	23.59%	25.42%	31.63%	25.98%	28.83%	26.10%	23.09%	26.13%
COAL MINES	-2.17%	29.41%	0.92%	13.18%	26.79%	27.15%	24.23%	13.28%	15.00%	10.01%
QUARRIES	40.00%	28.70%	29.44%	29.74%	31.14%	30.36%	27.97%	27.15%	25.51%	33.77%
TOTAL MINING	13.87%	11.50%	19.88%	19.63%	19.39%	13.32%	15.42%	15.10%	17.95%	13.28%

TABLE 3: PROCESSING

INCOME TAX RATES	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981
AGRICULTURE	38.93%	34.63%	34.45%	34.34%	29.96%	33.09%	30.39%	28.37%	31.92%	32.27%
FORESTRY	35.97%	26.92%	36.07%	91.33%	42.34%	29.38%	25.99%	28.32%	28.22%	102.31%
MINERALS	17.83%	21.62%	15.75%	17.01%	27.58%	11.47%	11.05%	15.56%	19.56%	9.18%
PETROLEUM	16.94%	20.31%	30.77%	33.49%	22.92%	20.52%	20.30%	16.48%	30.70%	25.48%
TOTAL RESOURCES PROCESSING	27.80%	26.29%	29.17%	32.75%	27.26%	24.25%	22.28%	20.63%	28.55%	24.73%

TABLE 4: FABRICATING

INCOME TAX RATES	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981
FORESTRY	49.89%	18.38%	22.81%	18.54%	24.80%	24.54%	19.88%	28.44%	20.60%	14.92%
MINERALS	33.79%	23.15%	24.30%	27.63%	27.52%	23.33%	23.47%	25.33%	23.57%	20.63%
TOTAL RESOURCES FABRICATING	40.60%	19.64%	23.16%	21.36%	25.79%	24.08%	20.93%	27.69%	21.12%	15.93%

TABLE 5: TOTAL ACTIVITY

INCOME TAX RATES	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981
AGRICULTURE	37.33%	31.50%	32.77%	33.72%	29.39%	31.87%	27.65%	25.70%	29.78%	31.36%
FORESTRY	41.83%	22.04%	24.78%	24.36%	29.73%	26.51%	22.17%	28.31%	21.39%	18.07%
MINERALS	19.42%	15.03%	19.59%	20.61%	21.89%	14.65%	15.46%	16.21%	18.79%	12.82%
PETROLEUM	17.87%	20.08%	31.31%	36.54%	27.80%	28.00%	22.30%	17.43%	22.97%	25.54%
TOTAL RESOURCES TOTAL ACTIVITY	26.06%	20.72%	26.14%	30.08%	26.93%	25.07%	21.14%	19.53%	22.09%	22.03%
TOTAL, ALL INDUSTRIES	31.88%	28.07%	27.45%	29.99%	27.74%	26.01%	22.57%	20.35%	22.06%	22.18%

TABLE 6: MINERAL SECTOR

INCOME TAX RATES	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981
PRIMARY	13.85%	11.51%	19.89%	19.63%	19.39%	13.33%	15.42%	15.10%	17.95%	13.28%
PROCESSING	17.83%	21.62%	15.75%	17.01%	27.58%	11.47%	11.05%	15.56%	19.56%	9.18%
FABRICATING	33.79%	23.15%	24.30%	27.63%	27.52%	23.33%	23.47%	25.33%	23.57%	20.63%
TOTAL MINERAL SECTOR	19.42%	15.03%	19.59%	20.61%	21.89%	14.65%	15.46%	16.21%	18.79%	12.82%

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  1982     1983     1984     AVG.  C.O.V.

 67.80%   42.27%   28.07%   21.24%  23.47%
  9.88%   46.30%   36.48%   38.38%  71.21%
     NA   31.86%       NA   15.93%  18.20%
 29.49%   28.45%   27.41%   25.89%  26.73%
  -----    -----    -----    -----   -----
 33.04%   29.02%   29.35%   21.80%  22.68%
----------------------------------------

  1982     1983     1984     AVG.  C.O.V.

     NA   27.92%       NA   13.62%  29.43%
136.00%   89.33%   84.99%   23.62%  25.07%
  1.02%    4.95%   12.98%   15.78%  66.40%
145.10%   64.89%   26.65%   30.38%  12.69%
  -----    -----    -----    -----   -----
-42.64%   31.89%-147.83%   15.94%  18.18%
----------------------------------------

  1982     1983     1984     AVG.  C.O.V.

 29.60%   29.65%   28.01%   32.84%   8.65%
     NA   35.54%   47.97%   44.68%  59.59%
     NA   93.14%   30.94%   16.66%  31.19%
  9.39%   17.28%    5.98%   23.79%  24.13%
  -----    -----    -----    -----   -----
 26.59%   29.21%   17.90%   26.37%  12.75%
----------------------------------------

  1982     1983     1984     AVG.  C.O.V.

     NA       NA   20.16%   24.28%  38.28%
 45.87%   28.44%   27.12%   25.27%  13.71%
  -----    -----    -----    -----   -----
313.70%  110.47%   22.98%   24.03%  26.38%
----------------------------------------

  1982     1983     1984     AVG.  C.O.V.

 32.33%   30.71%   28.02%   31.11%   9.91%
     NA  227.81%   24.87%   25.92%  24.05%
     NA   38.12%   47.37%   17.45%  16.27%
 25.47%   27.51%   22.66%   24.99%  23.13%
  -----    -----    -----    -----   -----
 33.06%   30.32%   25.06%   23.98%  13.31%

 33.96%   27.41%   23.50%   25.83%  14.14%
----------------------------------------

  1982     1983     1984     AVG.  C.O.V.

     NA   31.86%       NA   15.93%  18.20%
     NA   93.14%   30.94%   16.66%  31.19%
 45.87%   28.44%   27.12%   25.27%  13.71%
  -----    -----    -----    -----   -----
-89.32%   38.12%   47.37%   17.45%  16.27%
----------------------------------------
```

Rates of Return

In this section rates of return on assets and equity, both before and after tax, are examined. These ratios are important because they measure the efficiency with which the firms are utilizing their resources and the subsequent rewards to the owners of the capital invested. Unlike total profit volumes, these statistics implicitly take account of firm or industry size. In this manner inter-industry comparisons can more readily be made.

Rate of Return on Assets

Standard accounting practice values assets at historical cost rather than replacement or current market value. This is an important factor to bear in mind when examining returns on assets. The ratios are important because, as Pye notes,[13] the firm must have the capacity to generate a satisfactory return to all holders of asset claims.

Returns on assets in the primary stage of activity are illustrated in figures 127, 128 and 131. Before-tax returns (figure 127) show mining's returns ranging from a high of 17.2 percent in 1980 to a record low of -0.86 percent in 1982. Forestry ranged between its high of 19.3 percent in 1980 to a low of 1.3 percent in in 1975. Agriculture reached its high of 8.4 percent in 1973 and hit its lowest point in 1982 at 1.5 percent. Petroleum had its poorest year in 1970 (3.6 percent), peaking in 1979 at 15.2 percent. Averages over the twenty-year period were 8.8 percent for mining, 8.9 percent for petroleum, 7.3 percent for forestry, and 4.5 percent for agriculture. The total economy average was only 4.4 percent. The higher returns enjoyed by the four resource sectors may be a reflection of the higher degree of risk involved in resource industries, especially at the primary stage of activity.

Figure 128, showing after-tax returns, moves all resource industries closer to the economy-wide average. Petroleum, particularly in the second decade under consideration (post 1975), is the industry most affected by the tax system. This is particularly clear in figure 131 which depicts the difference between pre- and post-tax returns for each industry. For petroleum in 1984, this difference amounted to over seven percent. Mining was affected more than forestry in most years, while agriculture was the least affected. The negative differences in the 1982-84 period indicate that the tax system actually increased returns in these years, more for forestry than for either mining or agriculture.

Returns to the various types of mining activity are illustrated in figures 129 and 130. The coal industry exhibited the greatest volatility, going from negative returns in 1969 through 1972 to record highs of 30 percent (pre-tax) and 23 percent (post-tax) returns in 1980. Over the twenty-year period as a whole, however, it was non-metal mining which had the highest average return at 9.7 percent pre-tax (6.0 percent post-tax). Metal mining was second with 8.7 percent

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[13] C. Pye, *Profitability in the Canadian Mineral Industry*, Kingston: Centre for Resource Studies, 1981, p. 15.

(6.1 percent) followed by quarries (7.0 percent (4.6 percent)), coal (6.0 percent (3.6 percent)). The differences between pre- and post-tax returns is shown in figure 132.

Processing activity is highlighted in figures 133 and 134. Forestry varied the most, from 16 percent in 1973 and 1979 down to -5.2 percent in 1982 in pre-tax returns and from 10 percent to -3 percent in post-tax returns. Mining ranged from its 1965 high of 14.4 percent (9.2 percent after tax) to a low of -1.3 percent (-0.7 percent) in 1982. Agriculture had the highest pre-tax average return for the entire period at 10.0 percent and tied for highest average after tax returns with petroleum at 6.0 percent. All four resource industries were well above the total economy average return of 4.4 percent pre-tax and 3.0 percent post-tax. Agriculture showed the greatest stability over the twenty years both in pre- and post-tax returns, while mining and forestry, and to a lesser extent petroleum, showed significant cyclical patterns. The differences between before- and after-tax returns is shown in figure 137.

The mineral industry had higher returns in the fabricating stage of activity (figures 135, 136) than did forestry. Mineral returns averaged 7.1 before tax and 4.5 after tax (1965-84); returns in forestry were 6.3 before tax and 4.1 after tax. Forestry once again exhibited extreme volatility, ranging from 14.5 percent to -0.5 percent in before-tax returns. Minerals ranged from 11 percent to 2.1 percent.

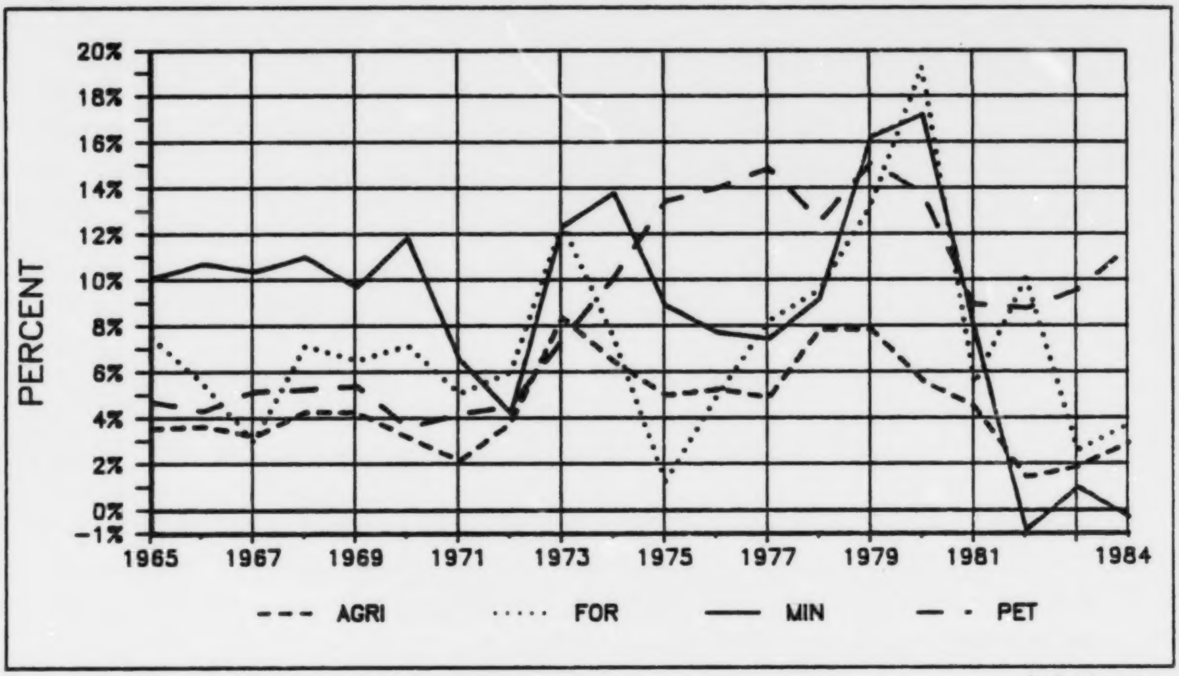
Returns on assets for total activity are shown in figures 139 and 140. Petroleum had the highest average returns over the entire period at 9.2 percent before tax and 5.5 percent after tax. Agriculture was second with returns of 8.9 percent and 5.5 percent. Minerals were third at 8.1 percent and 5.5 percent, and forestry was fourth with returns of 6.3 percent and 4.0 percent. The mineral and forestry industries once more show similar patterns, especially since 1973. This is true of both pre- and post-tax returns.

When the 1965-84 period is divided into two ten-year spans, the after-tax returns show significant changes over time. In the 1965-74 period, minerals enjoyed the highest returns at 6.4 percent. This was followed by agriculture, petroleum and forestry at 5.6 percent, 5.0 percent, and 3.8 percent respectively. However, in the post-1975 period, mineral returns fell below all other resource industries except forestry, to 4.5 percent, compared to 6.1 percent for petroleum, 5.4 percent for agriculture and 4.2 percent for forestry. Differences in before- and after-tax returns are depicted in figure 143.

The three stages of the mineral industry are shown in figures 141 and 142. All three stages show cyclical patterns with metal mining averaging the highest returns in both before- and after-tax form.

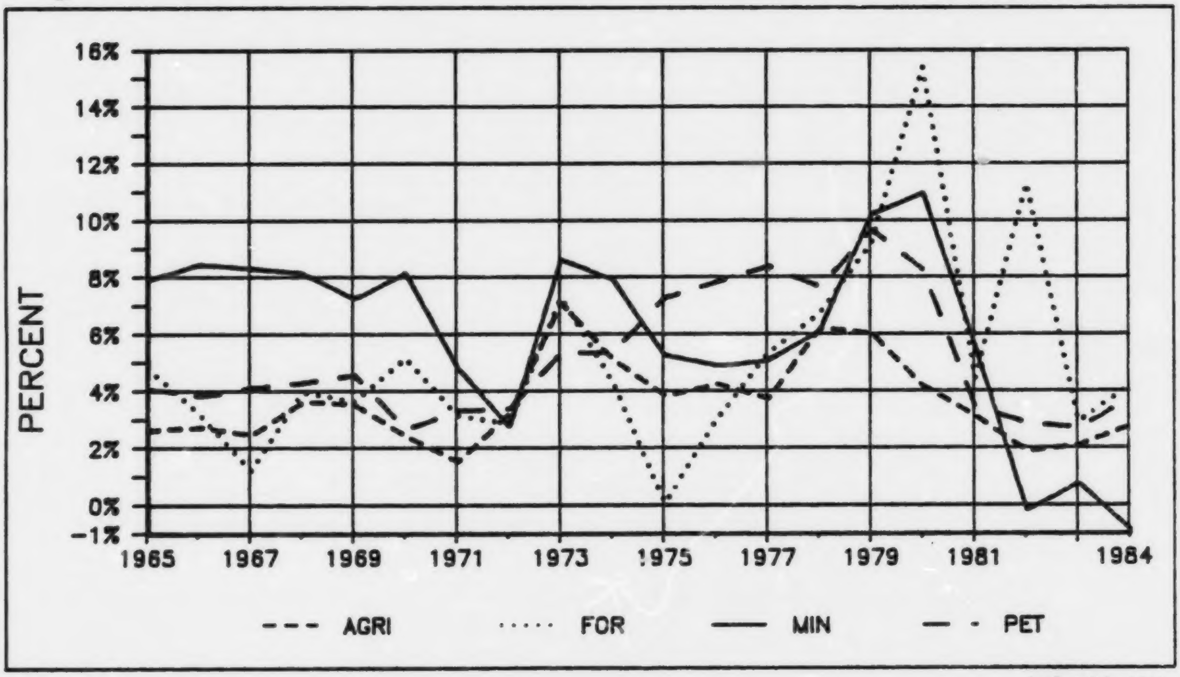
RETURN ON ASSETS: Primary Activity

Figure 127. Return on Assets, Primary Activity, Before Tax



(ref: table T1)

Figure 128. Return on Assets, Primary Activity, After Tax

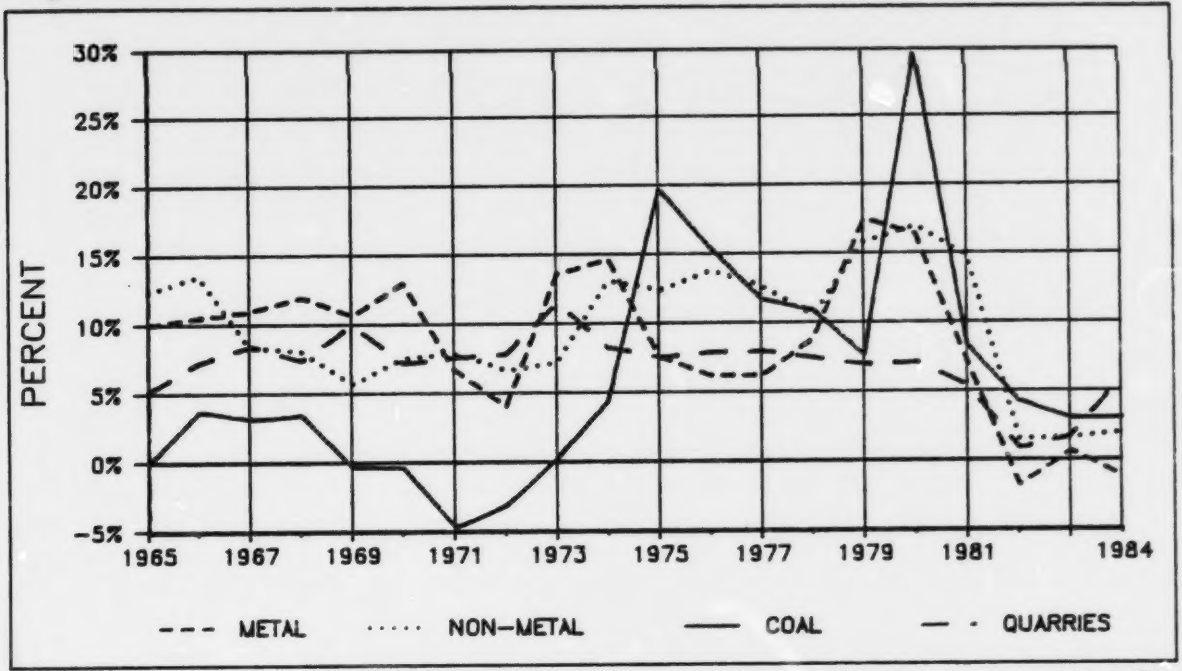


(ref: table U1)

Source: Statistics Canada, Catalogue 61–207, 61–208.

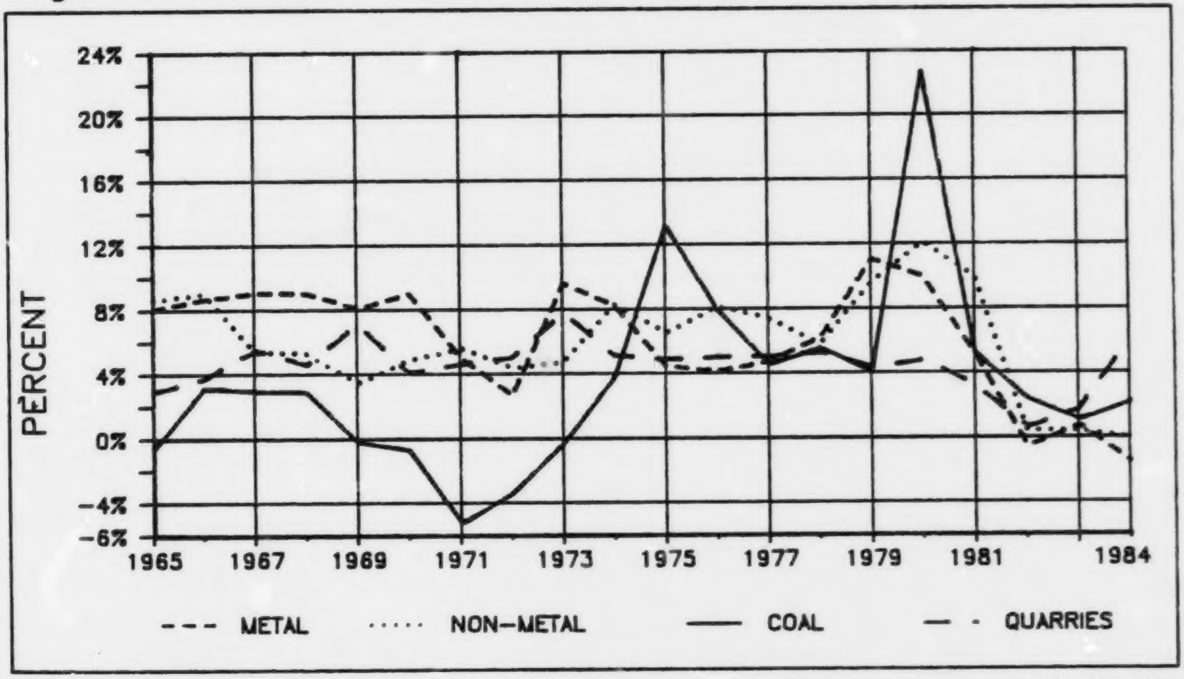
RETURN ON ASSETS: Mining Industry

Figure 129. Return on Assets, Mining Industry, Before Tax



(ref: table T2)

Figure 130. Return on Assets, Mining Industry, After Tax



(ref: table U2)

Source: Statistics Canada, Catalogue 61-207, 61-208.

RETURN ON ASSETS: Primary Activity, Mining Industry

Figure 131. Return on Assets, Primary Activity
Difference Between Before and After Tax Returns

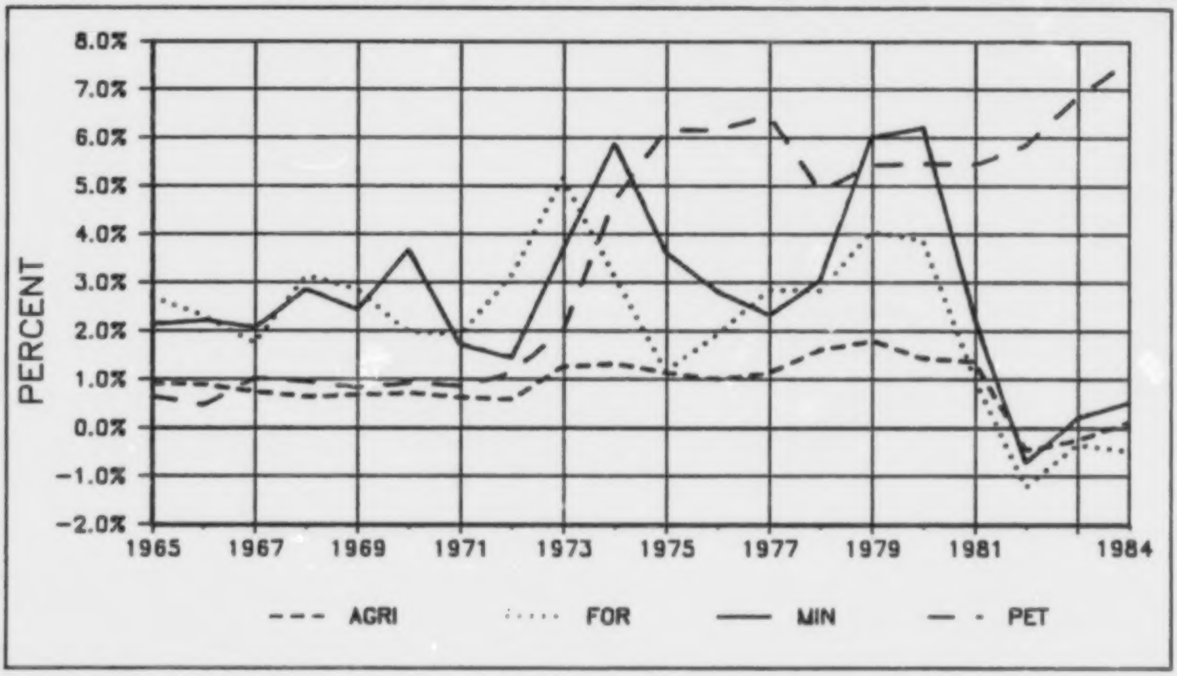
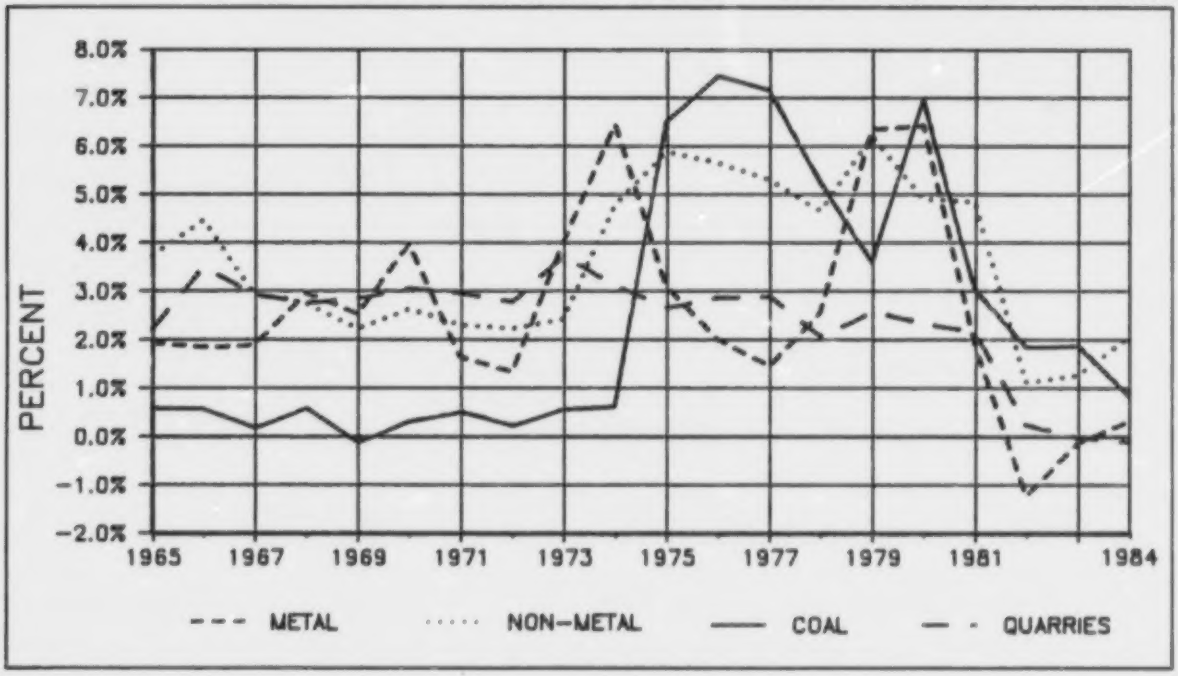


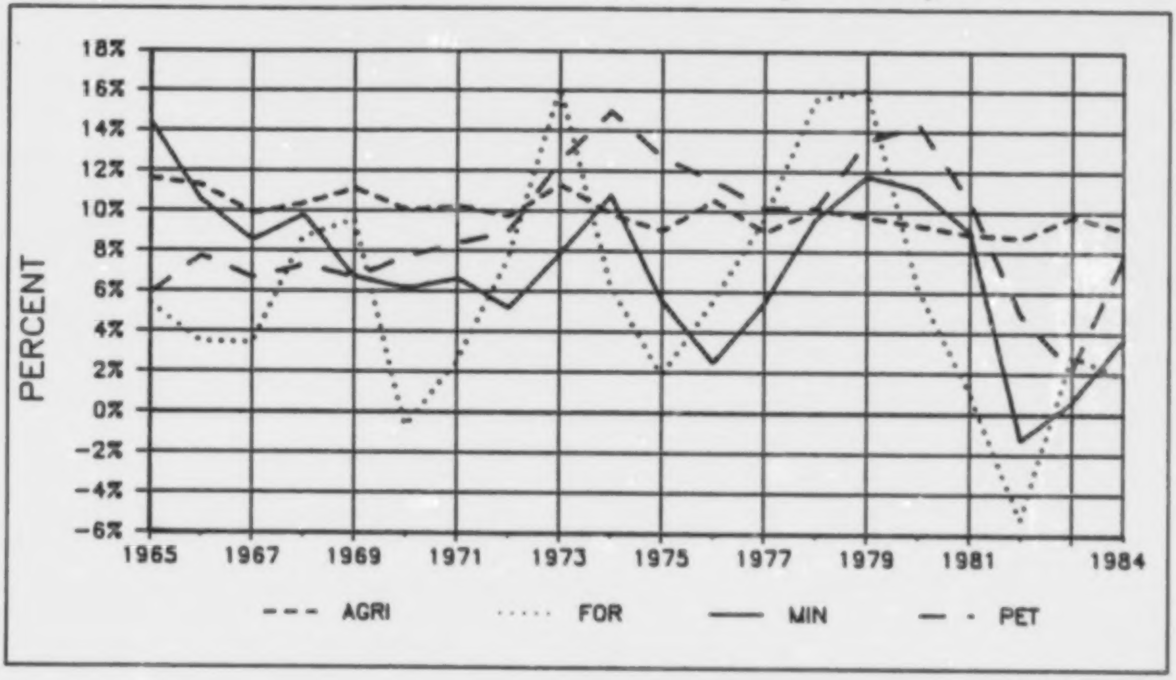
Figure 132. Return on Assets, Mining Industry
Difference Between Before and After Tax Returns



Source: Statistics Canada, Catalogue 61-207, 61-208.

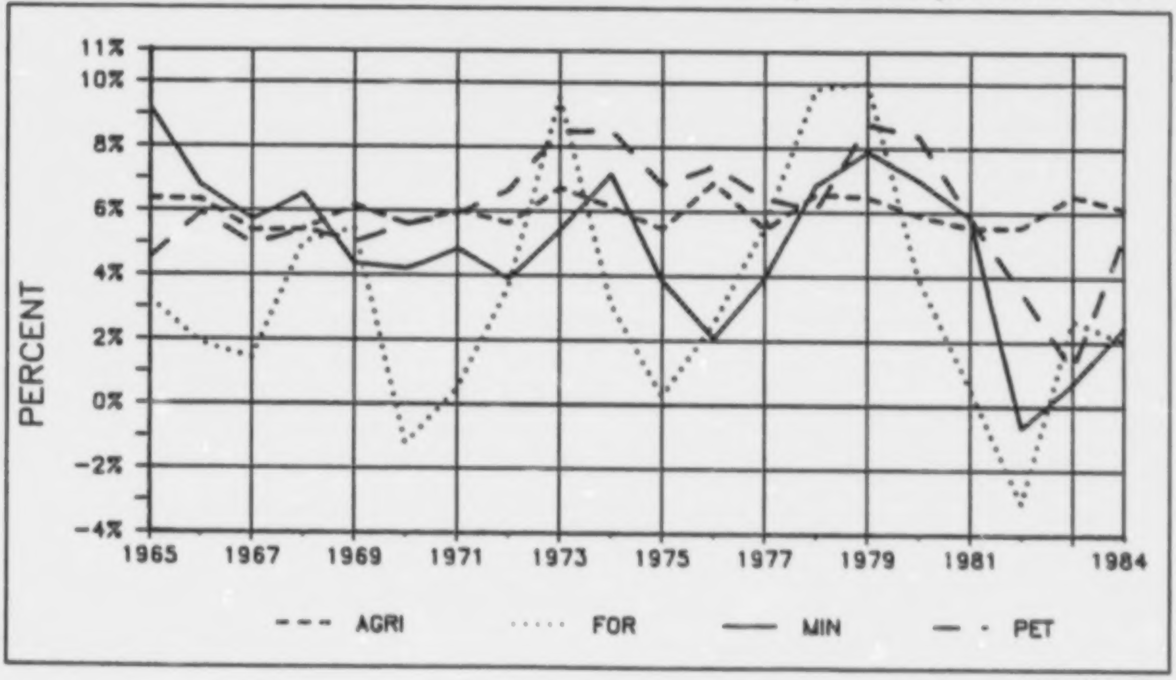
RETURN ON ASSETS: Processing Activity

Figure 133. Return on Assets, Processing Activity, Before Tax



(ref: table T3)

Figure 134. Return on Assets, Processing Activity, After Tax

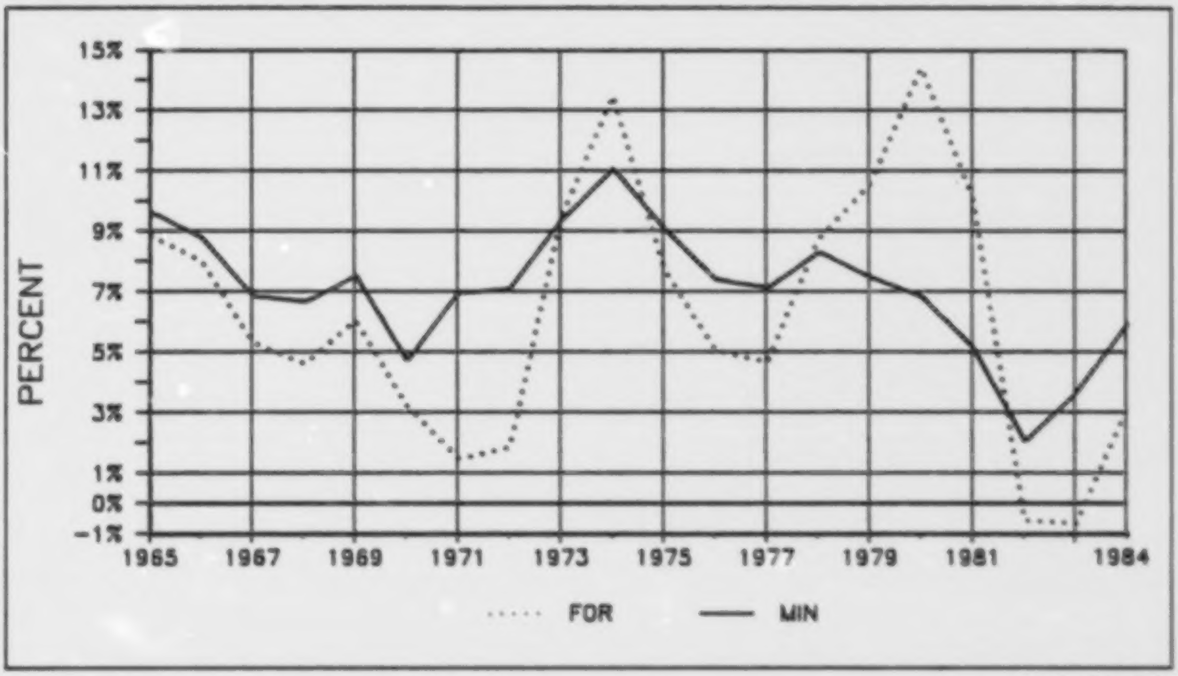


(ref: table U3)

Source: Statistics Canada, Catalogue 61–207, 61–208.

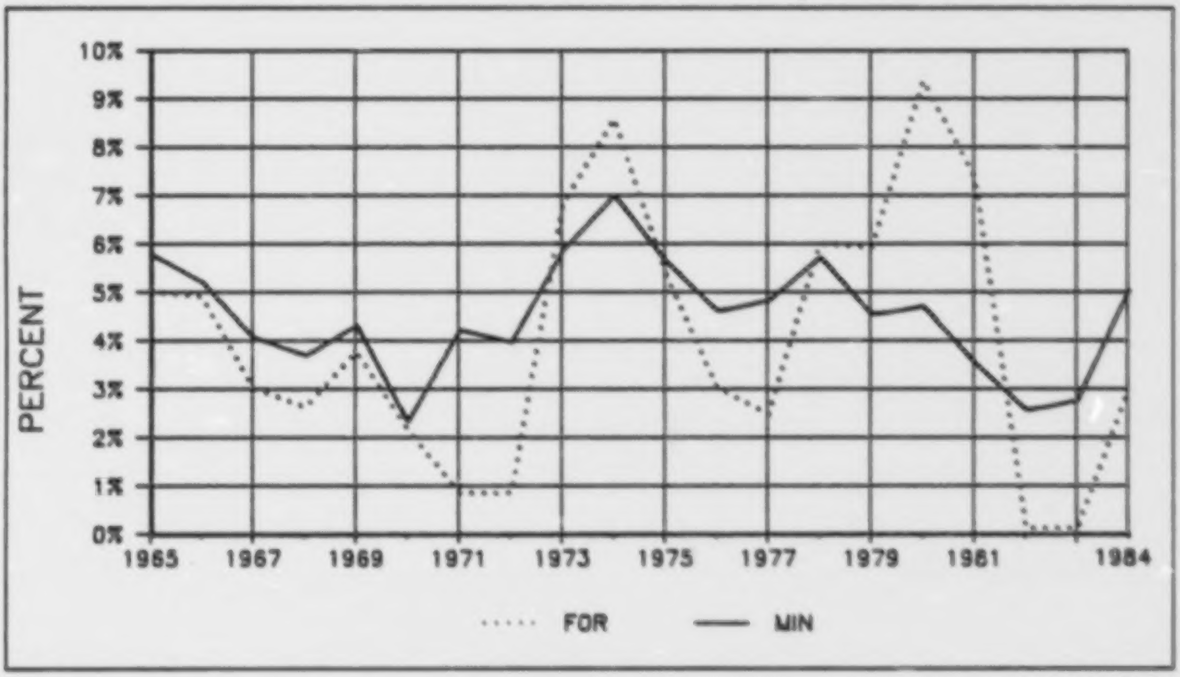
RETURN ON ASSETS: Fabricating Activity

Figure 135. Return on Assets, Fabricating Activity, Before Tax



(ref: table T4)

Figure 136. Return on Assets, Fabricating Activity, After Tax



(ref: table U4)

Source: Statistics Canada, Catalogue 61-207, 61-208.

RETURN ON ASSETS: Processing and Fabricating Activity

Figure 137. Return on Assets, Processing Activity
Difference Between Before and After Tax Returns

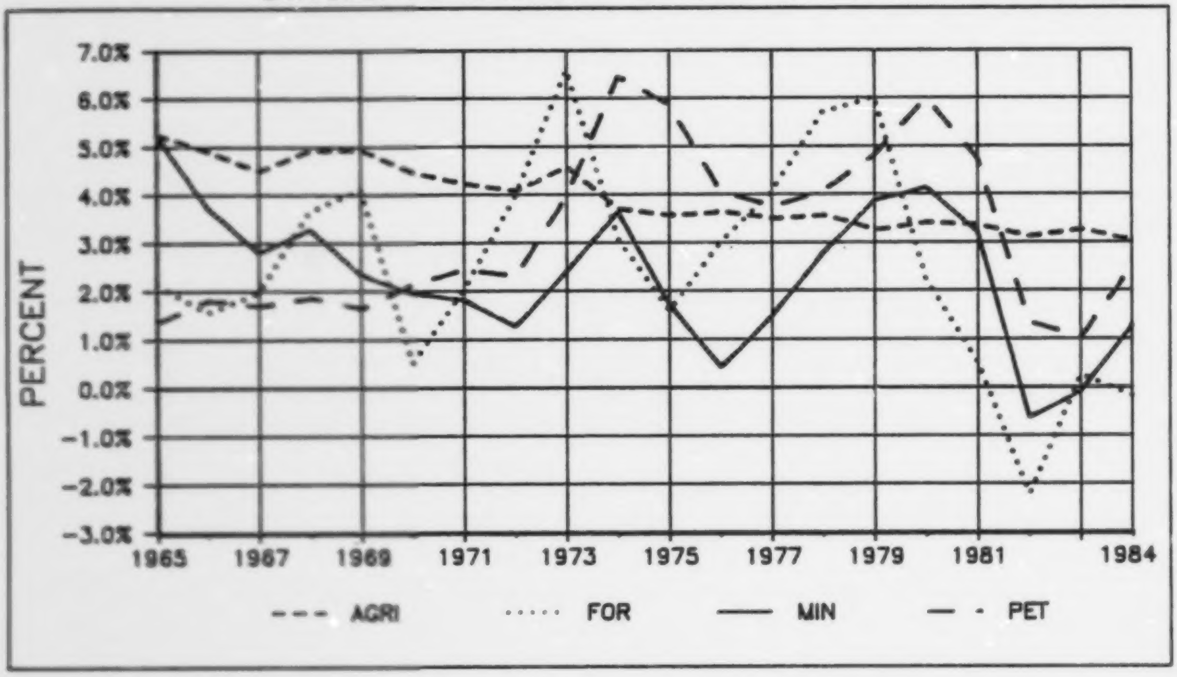
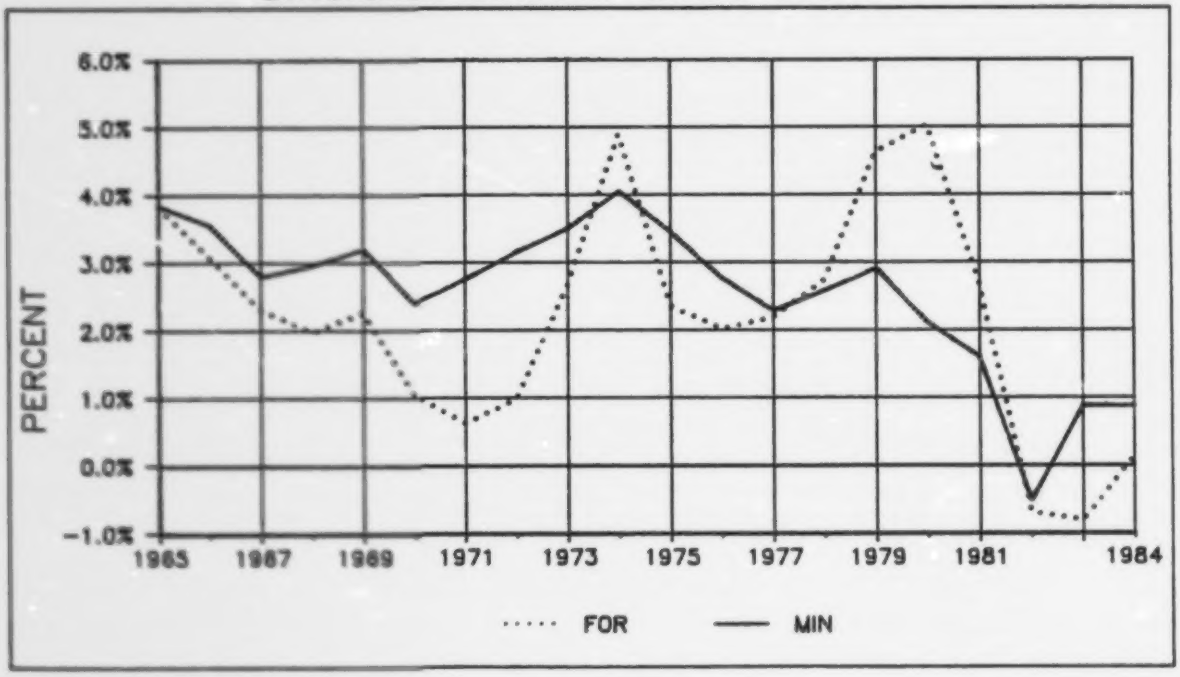


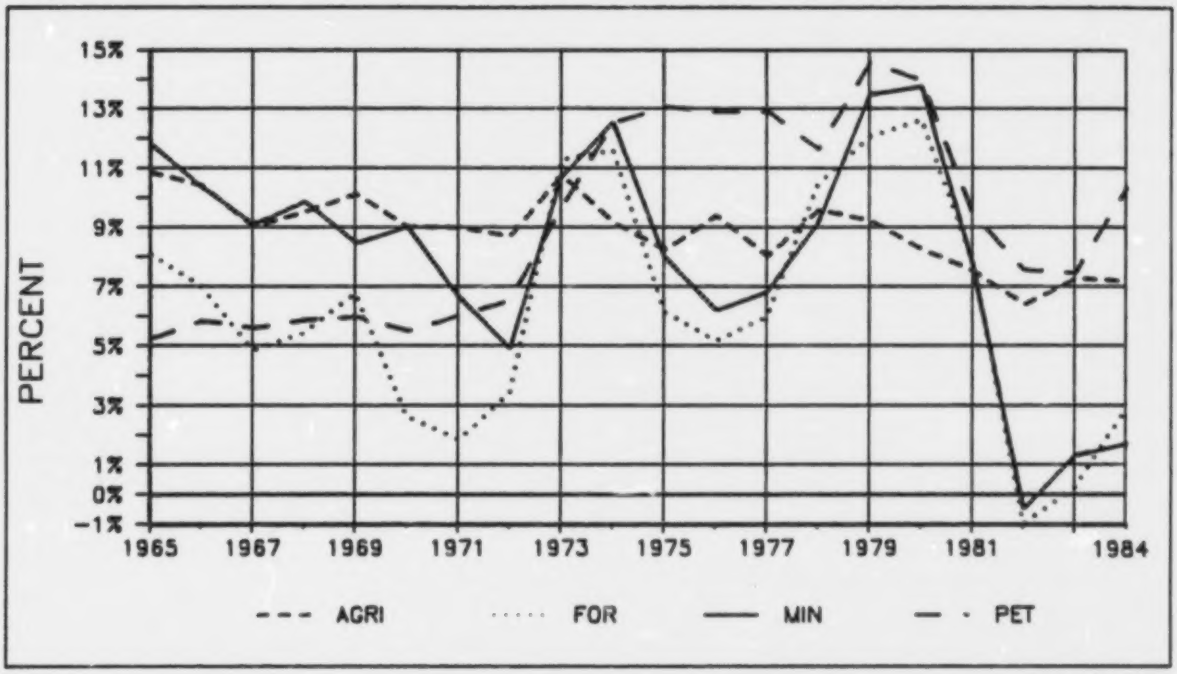
Figure 138. Return on Assets, Fabricating Activity
Difference Between Before and After Tax Returns



Source: Statistics Canada, Catalogue 61-207, 61-208.

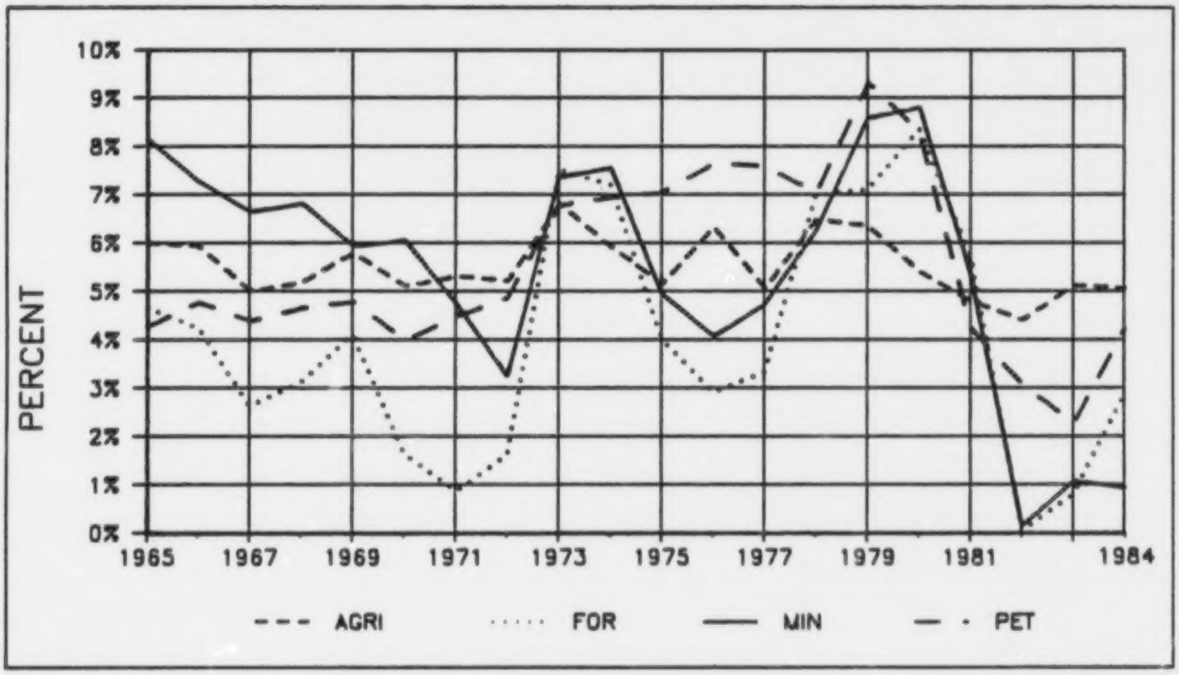
RETURN ON ASSETS: Total Activity

Figure 139. Return on Assets, Total Activity, Before Tax



(ref: table T5)

Figure 140. Return on Assets, Total Activity, After Tax

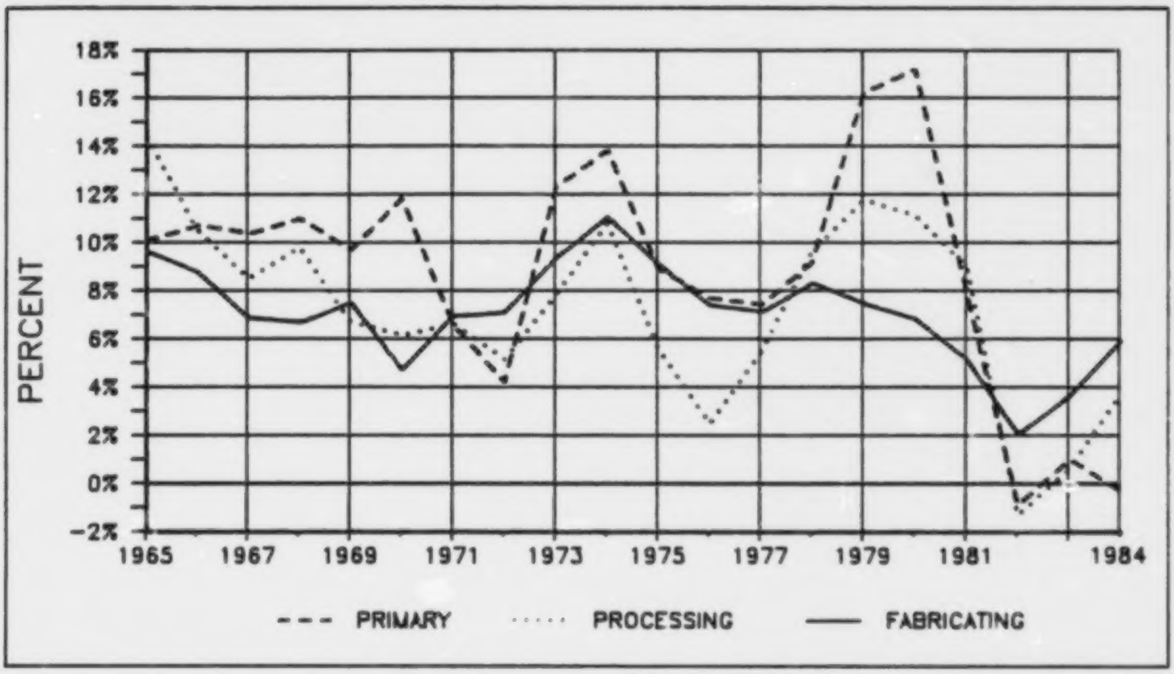


(ref: table U5)

Source: Statistics Canada, Catalogue 61-207, 61-208.

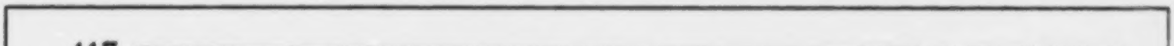
RETURN ON ASSETS: Mineral Sector

Figure 141. Return on Assets, Mineral Sector, Before Tax



(ref: table T6)

Figure 142. Return on Assets, Mineral Sector, After Tax



(ref: table U6)

Source: Statistics Canada, Catalogue 61-207, 61-208.

RETURN ON ASSETS: Total Activity, Mineral Sector

Figure 143. Return on Assets, Total Activity
Difference Between Before and After Tax Returns

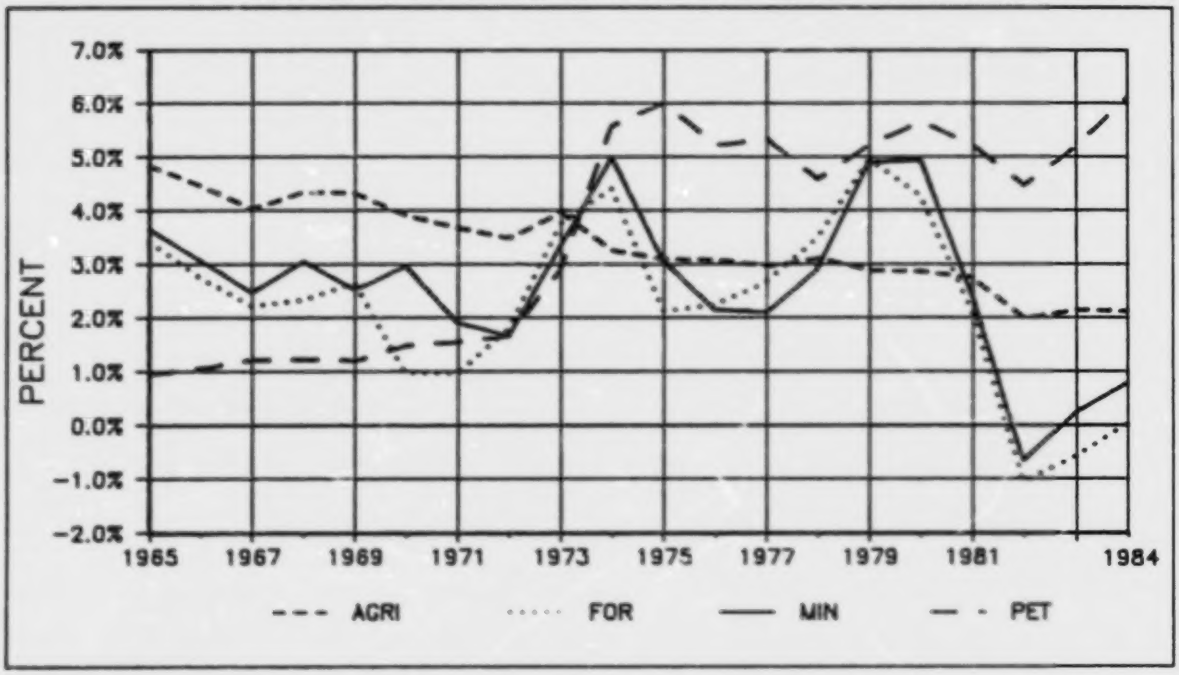
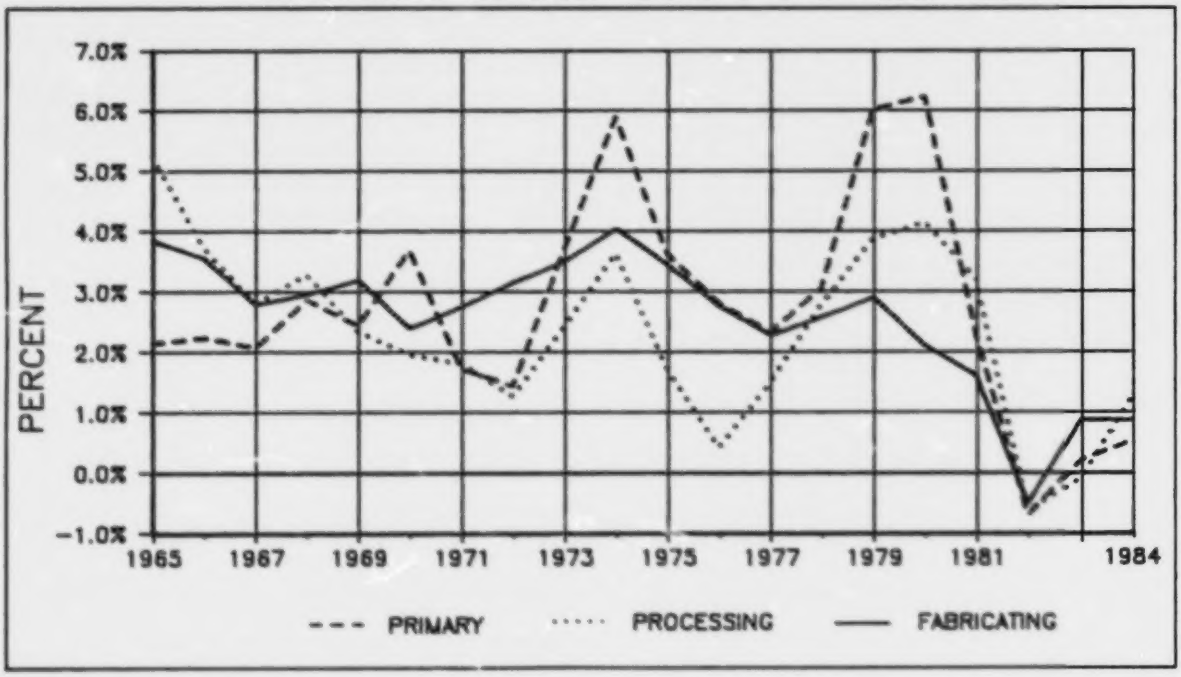


Figure 144. Return on Assets, Mineral Sector
Difference Between Before and After Tax Returns



Source: Statistics Canada, Catalogue 61–207, 61–208.

Table T

TABLE 1: PRIMARY ACTIVITY

RETURN ON ASSETS BEFORE TAX	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975
AGRICULTURE	3.60%	3.68%	3.23%	4.30%	4.27%	3.19%	2.18%	3.84%	8.41%	6.46%	5.01%
FORESTRY	7.54%	5.56%	2.99%	7.15%	6.53%	7.17%	5.09%	6.03%	12.48%	7.47%	1.27%
MINERALS	10.11%	10.75%	10.40%	11.04%	9.71%	11.88%	6.58%	4.22%	12.36%	13.84%	8.91%
PETROLEUM	4.77%	4.33%	5.21%	5.30%	5.44%	3.64%	4.22%	4.58%	7.41%	10.13%	13.48%
TOTAL RESOURCES PRIMARY	7.40%	7.32%	7.28%	7.70%	7.49%	7.73%	5.27%	4.38%	10.02%	11.58%	10.32%

TABLE 2: MINING INDUSTRY

RETURN ON ASSETS BEFORE TAX	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975
METAL MINES	10.07%	10.59%	11.04%	12.01%	10.67%	13.03%	6.68%	4.05%	13.67%	14.71%	7.56%
NON-METAL MINES	12.44%	13.58%	8.35%	8.10%	5.73%	7.57%	7.96%	6.66%	7.24%	13.13%	12.45%
COAL MINES	0.00%	3.76%	3.16%	3.52%	-0.32%	-0.39%	-4.69%	-3.07%	0.36%	4.51%	19.77%
QUARRIES	5.24%	7.31%	8.50%	7.40%	10.04%	7.20%	7.66%	7.89%	11.59%	8.27%	7.57%
TOTAL MINING	10.11%	10.84%	10.40%	11.04%	9.70%	11.88%	6.58%	4.22%	12.36%	13.84%	8.91%

TABLE 3: PROCESSING

RETURN ON ASSETS BEFORE TAX	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975
AGRICULTURE	11.64%	11.25%	9.89%	10.39%	11.13%	10.08%	10.27%	9.72%	11.34%	9.84%	9.04%
FORESTRY	5.38%	3.45%	3.40%	8.69%	9.62%	-0.70%	2.52%	7.64%	16.18%	6.23%	1.87%
MINERALS	14.44%	10.53%	8.54%	9.83%	6.72%	6.16%	6.67%	5.17%	7.87%	10.81%	5.58%
PETROLEUM	5.92%	7.77%	6.65%	7.32%	6.71%	7.75%	8.42%	8.98%	12.50%	14.98%	12.68%
TOTAL RESOURCES PROCESSING	10.46%	9.30%	8.10%	9.37%	8.45%	7.30%	8.02%	8.23%	11.60%	11.53%	8.90%

TABLE 4: FABRICATING

RETURN ON ASSETS BEFORE TAX	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975
FORESTRY	8.85%	8.02%	5.33%	4.62%	6.08%	3.23%	1.49%	1.89%	9.51%	13.51%	7.75%
MINERALS	9.65%	8.80%	6.87%	6.69%	7.56%	4.75%	7.01%	7.15%	9.41%	11.09%	9.11%
TOTAL RESOURCES FABRICATING	9.03%	8.21%	5.69%	5.11%	6.44%	3.61%	2.87%	3.28%	9.48%	12.85%	8.12%

TABLE 5: TOTAL ACTIVITY

RETURN ON ASSETS BEFORE TAX	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975
AGRICULTURE	10.86%	10.41%	9.05%	9.57%	10.14%	9.03%	9.01%	8.70%	10.79%	9.20%	8.25%
FORESTRY	8.10%	7.00%	4.87%	5.48%	6.79%	2.63%	1.85%	3.44%	11.30%	11.62%	6.16%
MINERALS	11.83%	10.36%	9.13%	9.90%	8.48%	9.07%	6.67%	4.92%	10.74%	12.58%	8.01%
PETROLEUM	5.27%	5.86%	5.62%	5.92%	6.02%	5.51%	6.07%	6.57%	9.70%	12.55%	13.09%
TOTAL RESOURCES TOTAL ACTIVITY	9.12%	8.41%	7.24%	7.79%	7.65%	6.67%	5.88%	5.73%	10.55%	11.81%	9.30%
TOTAL, ALL INDUSTRIES	4.63%	5.22%	4.74%	4.86%	4.77%	3.85%	4.22%	3.72%	4.71%	5.58%	4.84%

TABLE 6: MINERAL SECTOR

RETURN ON ASSETS BEFORE TAX	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975
PRIMARY	10.11%	10.75%	10.40%	11.04%	9.71%	11.88%	6.58%	4.22%	12.36%	13.84%	8.91%
PROCESSING	14.44%	10.53%	8.54%	9.83%	6.72%	6.16%	6.67%	5.17%	7.87%	10.81%	5.58%
FABRICATING	9.65%	8.80%	6.87%	6.69%	7.56%	4.75%	7.01%	7.15%	9.41%	11.09%	9.11%
TOTAL MINERAL SECTOR	11.83%	10.36%	9.13%	9.90%	8.48%	9.07%	6.67%	4.92%	10.74%	12.58%	8.01%

									======	AVERAGE	======	======	C.O.V.	=======
1976	1977	1978	1979	1980	1981	1982	1983	1984	65-84	65-74	75-84	65-84	65-74	75-8
5.29%	4.90%	7.86%	7.86%	5.62%	4.51%	1.45%	1.92%	2.96%	4.53%	4.32%	4.74%	42.19%	39.78%	43.5
4.98%	8.22%	9.60%	13.27%	19.30%	5.48%	10.10%	2.63%	3.76%	7.33%	6.80%	7.86%	55.28%	33.91%	66.0
7.71%	7.44%	9.23%	16.27%	17.23%	7.92%	-0.86%	1.03%	-0.31%	8.77%	10.09%	7.46%	54.36%	26.36%	79.2
14.04%	14.89%	12.57%	15.15%	13.75%	8.94%	8.76%	9.59%	11.43%	8.88%	5.50%	12.26%	44.66%	33.05%	18.8
-----	-----	-----	-----	-----	-----	-----	-----	------						
10.25%	10.78%	10.82%	14.93%	14.30%	8.21%	5.45%	6.61%	7.58%	8.77%	7.62%	9.93%	31.22%	25.51%	29.4

									======	AVERAGE	======	======	C.O.V.	=======
1976	1977	1978	1979	1980	1981	1982	1983	1984	65-84	65-74	75-84	65-84	65-74	75-8
6.19%	6.27%	8.86%	17.50%	16.41%	7.12%	-1.76%	0.68%	-1.18%	8.71%	10.65%	6.77%	60.50%	28.62%	91.9
13.86%	12.72%	10.52%	15.91%	17.04%	14.83%	1.56%	1.68%	2.04%	9.67%	9.08%	10.26%	47.40%	29.87%	56.7
15.45%	11.73%	10.92%	7.64%	29.70%	8.32%	4.29%	2.99%	3.13%	6.04%	0.69%	11.39%	133.11%	422.94%	69.9
7.96%	8.02%	7.44%	6.95%	7.19%	5.39%	0.90%	1.76%	5.99%	7.01%	8.11%	5.92%	33.36%	20.06%	41.0
-----	-----	-----	-----	-----	-----	-----	-----	------						
7.71%	7.44%	9.23%	16.27%	17.23%	7.92%	-0.86%	1.03%	-0.31%	8.78%	10.10%	7.46%	54.34%	26.37%	79.2

									======	AVERAGE	======	======	C.O.V.	=======
1976	1977	1978	1979	1980	1981	1982	1983	1984	65-84	65-74	75-84	65-84	65-74	75-8
10.57%	8.96%	10.15%	9.73%	9.33%	8.89%	8.70%	9.83%	9.16%	10.00%	10.56%	9.44%	8.44%	6.43%	6.1
5.55%	9.62%	15.56%	16.10%	6.20%	1.07%	-5.23%	2.94%	1.84%	5.90%	6.24%	5.55%	92.75%	71.08%	113.7
2.50%	5.46%	9.66%	11.79%	11.15%	9.04%	-1.28%	0.65%	3.75%	7.35%	8.88%	5.83%	51.55%	27.40%	73.1
11.51%	10.17%	10.17%	13.57%	14.36%	10.56%	4.89%	2.20%	7.81%	9.25%	8.70%	9.79%	35.26%	31.18%	37.2
-----	-----	-----	-----	-----	-----	-----	-----	------						
8.60%	8.69%	10.67%	12.39%	11.41%	8.86%	3.87%	4.15%	6.90%	8.87%	9.29%	8.44%	24.55%	15.12%	31.6

									======	AVERAGE	======	======	C.O.V.	=======
1976	1977	1978	1979	1980	1981	1982	1983	1984	65-84	65-74	75-84	65-84	65-74	75-8
5.07%	4.68%	8.77%	10.57%	14.43%	10.08%	-0.56%	-0.66%	3.19%	6.29%	6.25%	6.33%	65.89%	57.11%	73.4
7.40%	7.14%	8.35%	7.48%	6.84%	5.15%	2.06%	3.69%	5.96%	7.11%	7.90%	6.32%	28.94%	22.02%	32.3
-----	-----	-----	-----	-----	-----	-----	-----	------						
5.73%	5.38%	8.64%	9.61%	12.07%	8.62%	0.21%	0.54%	3.93%	6.47%	6.66%	6.29%	52.28%	45.76%	58.5

									======	AVERAGE	======	======	C.O.V.	=======
1976	1977	1978	1979	1980	1981	1982	1983	1984	65-84	65-74	75-84	65-84	65-74	75-8
9.42%	8.04%	9.61%	9.25%	8.27%	7.54%	6.42%	7.30%	7.18%	8.90%	9.68%	8.13%	13.25%	7.90%	12.3
5.18%	6.02%	10.50%	12.08%	12.65%	7.81%	-0.97%	0.26%	2.95%	6.29%	6.31%	6.26%	61.30%	50.48%	70.6
6.23%	6.85%	9.19%	13.53%	13.79%	7.76%	-0.48%	1.35%	1.74%	8.10%	9.41%	6.80%	46.92%	22.31%	67.5
12.90%	12.94%	11.63%	14.57%	13.96%	9.47%	7.57%	7.47%	10.36%	9.15%	6.91%	11.39%	35.35%	32.26%	21.3
-----	-----	-----	-----	-----	-----	-----	-----	------						
8.73%	8.97%	10.38%	13.10%	12.91%	8.50%	4.16%	4.96%	6.86%	8.44%	8.10%	8.79%	28.34%	22.72%	31.8
4.46%	4.15%	4.66%	5.46%	5.26%	4.31%	2.25%	2.94%	3.76%	4.42%	4.63%	4.21%	18.12%	11.70%	22.5

									======	AVERAGE	======	======	C.O.V.	=======
1976	1977	1978	1979	1980	1981	1982	1983	1984	65-84	65-74	75-84	65-84	65-74	75-8
7.71%	7.44%	9.23%	16.27%	17.23%	7.92%	-0.86%	1.03%	-0.31%	8.77%	10.09%	7.46%	54.36%	26.36%	79.2
2.50%	5.46%	9.66%	11.79%	11.15%	9.04%	-1.28%	0.65%	3.75%	7.35%	8.88%	5.83%	51.55%	27.40%	73.1
7.40%	7.14%	8.35%	7.48%	6.84%	5.15%	2.06%	3.69%	5.96%	7.11%	7.90%	6.32%	28.94%	22.02%	32.3
-----	-----	-----	-----	-----	-----	-----	-----	------						
6.23%	6.85%	9.19%	13.53%	13.79%	7.76%	-0.48%	1.35%	1.74%	8.10%	9.41%	6.80%	46.92%	22.31%	67.5

Table U

TABLE 1: PRIMARY ACTIVITY

RETURN ON ASSETS AFTER TAX	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975
AGRICULTURE	2.67%	2.78%	2.47%	3.65%	3.56%	2.45%	1.54%	3.24%	7.12%	5.12%	3.87%
FORESTRY	4.83%	3.24%	1.23%	3.98%	3.66%	5.18%	3.16%	2.87%	7.29%	4.32%	0.09%
MINERALS	7.95%	8.50%	8.32%	8.16%	7.26%	8.17%	4.85%	2.77%	8.65%	7.93%	5.28%
PETROLEUM	4.10%	3.85%	4.16%	4.33%	4.60%	2.68%	3.35%	3.41%	5.38%	5.40%	7.30%
TOTAL RESOURCES PRIMARY	5.92%	5.94%	5.78%	5.89%	5.82%	5.42%	3.97%	3.07%	7.16%	6.59%	5.89%

TABLE 2: MINING INDUSTRY

RETURN ON ASSETS AFTER TAX	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975
METAL MINES	8.13%	8.73%	9.12%	9.03%	8.13%	9.04%	5.03%	2.70%	9.63%	8.22%	4.45%
NON-METAL MINES	8.69%	9.09%	5.40%	5.33%	3.49%	4.92%	5.65%	4.42%	4.78%	8.32%	6.55%
COAL MINES	-0.59%	3.18%	2.97%	2.91%	-0.21%	-0.72%	-5.21%	-3.31%	-0.23%	3.85%	13.23%
QUARRIES	2.99%	3.80%	5.57%	4.62%	7.16%	4.12%	4.69%	5.10%	7.83%	5.15%	4.89%
TOTAL MINING	7.94%	8.57%	8.32%	8.16%	7.26%	8.17%	4.86%	2.77%	8.65%	7.93%	5.28%

TABLE 3: PROCESSING

RETURN ON ASSETS AFTER TAX	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975
AGRICULTURE	6.37%	6.33%	5.38%	5.43%	6.18%	5.60%	6.02%	5.63%	6.74%	6.12%	5.47%
FORESTRY	3.25%	1.88%	1.41%	5.02%	5.49%	-1.22%	0.47%	3.65%	9.57%	3.13%	0.27%
MINERALS	9.18%	6.78%	5.72%	6.52%	4.37%	4.20%	4.85%	3.89%	5.43%	7.16%	3.85%
PETROLEUM	4.54%	5.94%	4.95%	5.44%	5.05%	5.60%	5.94%	6.66%	8.51%	8.52%	6.81%
TOTAL RESOURCES PROCESSING	6.52%	5.93%	5.00%	5.78%	5.30%	4.58%	5.15%	5.35%	7.41%	6.90%	5.09%

TABLE 4: FABRICATING

RETURN ON ASSETS AFTER TAX	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975
FORESTRY	5.02%	4.92%	3.01%	2.64%	3.79%	2.18%	0.86%	0.88%	6.83%	8.61%	5.39%
MINERALS	5.80%	5.23%	4.07%	3.71%	4.35%	2.34%	4.24%	3.98%	5.89%	7.02%	5.65%
TOTAL RESOURCES FABRICATING	5.19%	5.00%	3.26%	2.89%	3.93%	2.22%	1.71%	1.70%	6.58%	8.18%	5.46%

TABLE 5: TOTAL ACTIVITY

RETURN ON ASSETS AFTER TAX	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975
AGRICULTURE	6.01%	5.94%	5.02%	5.19%	5.80%	5.12%	5.33%	5.21%	6.81%	5.93%	5.15%
FORESTRY	4.66%	4.25%	2.64%	3.14%	4.12%	1.65%	0.88%	1.63%	7.53%	7.20%	4.02%
MINERALS	8.16%	7.27%	6.65%	6.83%	5.94%	6.08%	4.76%	3.25%	7.38%	7.58%	4.94%
PETROLEUM	4.29%	4.78%	4.39%	4.67%	4.81%	4.00%	4.49%	4.88%	6.79%	6.96%	7.06%
TOTAL RESOURCES TOTAL ACTIVITY	6.03%	5.73%	4.90%	5.18%	5.19%	4.39%	3.98%	3.73%	7.14%	7.04%	5.47%
TOTAL, ALL INDUSTRIES	3.03%	3.57%	3.23%	3.27%	3.15%	2.50%	2.87%	2.39%	3.07%	3.61%	3.09%

TABLE 6: MINERAL SECTOR

RETURN ON ASSETS AFTER TAX	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975
PRIMARY	7.95%	8.50%	8.32%	8.16%	7.26%	8.17%	4.85%	2.77%	8.65%	7.93%	5.28%
PROCESSING	9.18%	6.78%	5.72%	6.52%	4.37%	4.20%	4.85%	3.89%	5.43%	7.16%	3.85%
FABRICATING	5.80%	5.23%	4.07%	3.71%	4.35%	2.34%	4.24%	3.98%	5.89%	7.02%	5.65%
TOTAL MINERAL SECTOR	8.16%	7.27%	6.65%	6.83%	5.94%	6.08%	4.76%	3.25%	7.38%	7.58%	4.94%

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**************************************************************************************************************************
                                                                                  =======  AVERAGE ========   ======= C.O.V.   ======
  1976     1977     1978     1979     1980     1981     1982     1983     1984     65-84     65-74     75-84     65-84    65-74     75-8

  4.27%    3.74%    6.22%    6.04%    4.18%    3.14%    1.90%    2.15%    2.81%    3.65%     3.46%     3.83%    40.07%   43.82%     35.9
  3.02%    5.35%    6.75%    9.20%   15.41%    4.46%   11.31%    2.95%    4.23%    5.13%     3.98%     6.28%    66.93%   38.44%     68.6
  4.90%    5.10%    6.15%   10.22%   10.98%    5.64%   -0.17%    0.80%   -0.86%    6.03%     7.26%     4.80%    53.27%   25.07%     78.7
  7.85%    8.41%    7.65%    9.67%    8.26%    3.46%    2.88%    2.71%    3.81%    5.16%     4.13%     6.20%    41.50%   19.90%     40.6
  -----    -----    -----    -----    -----    -----    -----    -----   ------
  6.11%    6.57%    6.93%    9.57%    8.93%    4.13%    2.06%    2.16%    2.52%    5.52%     5.56%     5.49%    35.92%   20.42%     46.7
--------------------------------------------------------------------------------------------------------------------------
                                                                                  =======  AVERAGE ========   ======= C.O.V.   ======
  1976     1977     1978     1979     1980     1981     1982     1983     1984     65-84     65-74     75-84     65-84    65-74     75-8

  4.18%    4.80%    6.27%   11.13%    9.95%    5.21%   -0.54%    0.79%   -1.52%    6.12%     7.78%     4.47%    57.81%   26.69%     87.4
  8.20%    7.40%    5.85%    9.68%   12.13%    9.98%    0.42%    0.39%   -0.04%    6.03%     6.01%     6.06%    53.40%   30.94%     68.6
  7.98%    4.56%    5.65%    4.02%   22.72%    5.27%    2.43%    1.09%    2.27%    3.59%     0.26%     6.92%   163.12%1075.76%     89.6
  5.06%    5.10%    5.36%    4.34%    4.85%    3.21%    0.66%    1.78%    6.09%    4.62%     5.10%     4.14%    34.52%   27.33%     39.5
  -----    -----    -----    -----    -----    -----    -----    -----   ------
  4.90%    5.10%    6.15%   10.22%   10.98%    5.64%   -0.17%    0.80%   -0.86%    6.03%     7.26%     4.80%    53.28%   25.11%     78.7
--------------------------------------------------------------------------------------------------------------------------
                                                                                  =======  AVERAGE ========   ======= C.O.V.   ======
  1976     1977     1978     1979     1980     1981     1982     1983     1984     65-84     65-74     75-84     65-84    65-74     75-8

  6.91%    5.46%    6.57%    6.46%    5.90%    5.52%    5.57%    6.54%    6.11%    6.02%     5.98%     6.05%     7.90%    7.18%      8.5
  2.53%    5.55%    9.84%   10.07%    3.95%    0.55%   -3.03%    2.68%    2.02%    3.35%     3.27%     3.44%   102.14%   87.28%    113.7
  2.07%    3.96%    6.86%    7.90%    6.99%    5.83%   -0.66%    0.72%    2.46%    4.98%     5.96%     4.00%    47.91%   23.90%     68.1
  7.43%    6.42%    6.08%    8.73%    8.36%    5.83%    3.54%    1.17%    5.29%    6.04%     6.12%     5.97%    29.50%   21.66%     35.9
  -----    -----    -----    -----    -----    -----    -----    -----   ------
  5.57%    5.48%    6.82%    8.06%    6.91%    5.23%    2.71%    2.75%    4.70%    5.58%     5.83%     5.33%    23.56%   14.50%     30.3
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                                                                                  =======  AVERAGE ========   ======= C.O.V.   ======
  1976     1977     1978     1979     1980     1981     1982     1983     1984     65-84     65-74     75-84     65-84    65-74     75-8

  3.04%    2.48%    6.01%    5.93%    9.39%    7.39%    0.13%    0.15%    3.04%    4.08%     3.87%     4.29%    65.00%   61.44%     67.2
  4.62%    4.85%    5.75%    4.56%    4.73%    3.54%    2.57%    2.79%    5.07%    4.54%     4.66%     4.41%    25.75%   27.23%     23.6
  -----    -----    -----    -----    -----    -----    -----    -----   ------
  3.49%    3.16%    5.93%    5.50%    7.94%    6.25%    0.84%    0.88%    3.58%    4.18%     4.07%     4.30%    50.93%   50.38%     51.2
--------------------------------------------------------------------------------------------------------------------------
                                                                                  =======  AVERAGE ========   ======= C.O.V.   ======
  1976     1977     1978     1979     1980     1981     1982     1983     1984     65-84     65-74     75-84     65-84    65-74     75-8

  6.34%    5.07%    6.49%    6.35%    5.41%    4.79%    4.41%    5.14%    5.06%    5.53%     5.64%     5.42%    11.26%    9.47%     12.6
  2.91%    3.34%    7.00%    7.12%    8.37%    5.70%    0.07%    0.82%    2.90%    4.00%     3.77%     4.23%    60.21%   57.02%     61.9
  4.08%    4.75%    6.27%    8.60%    8.83%    5.34%    0.16%    1.09%    0.93%    5.46%     6.42%     4.50%    44.70%   20.77%     64.0
  7.66%    7.59%    7.03%    9.33%    8.30%    4.23%    3.08%    2.27%    4.24%    5.54%     5.01%     6.08%    33.14%   19.34%     37.6
  -----    -----    -----    -----    -----    -----    -----    -----   ------
  5.39%    5.51%    6.71%    8.33%    8.05%    4.83%    2.10%    2.17%    3.38%    5.27%     5.34%     5.20%    31.42%   20.55%     39.7

  2.97%    2.78%    3.26%    3.83%    3.64%    2.98%    1.84%    2.24%    3.00%    3.02%     3.07%     2.96%    15.96%   12.38%     18.8
--------------------------------------------------------------------------------------------------------------------------
                                                                                  =======  AVERAGE ========   ======= C.O.V.   ======
  1976     1977     1978     1979     1980     1981     1982     1983     1984     65-84     65-74     75-84     65-84    65-74     75-8

  4.90%    5.10%    6.15%   10.22%   10.98%    5.64%   -0.17%    0.80%   -0.86%    6.03%     7.26%     4.80%    53.27%   25.07%     78.7
  2.07%    3.96%    6.86%    7.90%    6.99%    5.83%   -0.66%    0.72%    2.46%    4.98%     5.96%     4.00%    47.91%   23.90%     68.1
  4.62%    4.85%    5.75%    4.56%    4.73%    3.54%    2.57%    2.79%    5.07%    4.54%     4.66%     4.41%    25.75%   27.23%     23.6
  -----    -----    -----    -----    -----    -----    -----    -----   ------
  4.08%    4.75%    6.27%    8.60%    8.83%    5.34%    0.16%    1.09%    0.93%    5.46%     6.42%     4.50%    44.70%   20.77%     64.0
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Returns to Equity

Return to equity may be the most important financial statistic from the point of view of the firm. It of course measures the return to the owners of the firm. Without adequate returns to shareholder equity, future financing through the equity markets may prove difficult and more costly methods may have to be used. Equity includes common and preferred shares, retained earnings, and contributed surplus.

Before-tax returns to equity in the primary stage of activity are shown in figure 145. Mining earned the highest returns in the 1965-74 period, averaging 16.9 percent. This compared to forestry's 16.2 percent, agriculture's 13.3 percent, petroleum's 8.8 percent and a total economy average of 13.9 percent. Once again, though, the 1975-84 period belonged to the petroleum industry with an average return of 25.6 percent, followed closely by forestry at 23.1 percent. Agriculture was third at 15.7 while mining earned only a 14.3 percent return. Mining was the only industry to have its returns actually fall from the previous period, another sign of the troubled times that have plagued the mining industry since 1980. The forestry average may be somewhat misleading as it includes an extraordinary 63.4 percent return in 1980. If 1980's figure is not included, forestry's average return would drop to 18.7 percent, still good enough to rank ahead of mining and agriculture. The total economy average for the 1975-84 period was 16.2 percent.

After-tax returns are depicted in figure 146. While the same patterns found in pre-tax returns are evident here also, some changes in relative positions do occur. For example, in 1973 the pre-tax returns to forestry and agriculture were 34 percent and 26 percent respectively. The post-tax numbers show these relative positions to be reversed, with agriculture earning 22 percent and forestry 20 percent. Averages for the entire 1965-84 period were 13.8 percent for forestry, 11.7 percent for agriculture, 10.7 percent for mining and finally 9.7 percent for petroleum. Differences between pre- and post-tax returns to equity are illustrated in figure 149.

The returns to the five categories of mining are shown in figures 147 and 148. Surprisingly, it is quarries that earn the highest return on equity, averaging 18.5 percent for the 1965-84 period in before-tax returns and 12.2 percent in post-tax returns. Coal showed the most volatility, ranging from -12.9 percent in 1971, up to 58.4 percent in 1980 (pre-tax).

Return on equity at the processing stage in figures 151 and 152 once again demonstrates the stability of the agricultural sector. It also has earned the highest average rate of return in both pre- and post-tax form over the entire period. In pre-tax returns, for example, agriculture earned an average of 22.2 percent, over five percent above its closest rival, petroleum. Even in the 1975-84 period, agriculture earned a full four percent more than petroleum. The mineral industry's average returns for the 1965-84 period were 14.8 percent before tax and 10.0 percent after tax. Forestry earned 16.5 percent before tax and 9.4 percent after-tax average returns for the same period.

Also of note in processing activity is forestry's volatility. As measured by the coefficient of variation, forestry's volatility was nearly double that of any other industry at 93.6 percent in before-tax form, and more than double in after-tax form at 103 percent. This compares, for example, to agriculture with a coefficient of variation of only 6.1 percent (pre-tax) and 12.4 percent (after tax). The mineral industry's coefficient of variation was 50.4 percent before tax and 46.6

percent after tax. Petroleum's coefficient of variation was 39.4 percent before tax and 31.8 after tax.

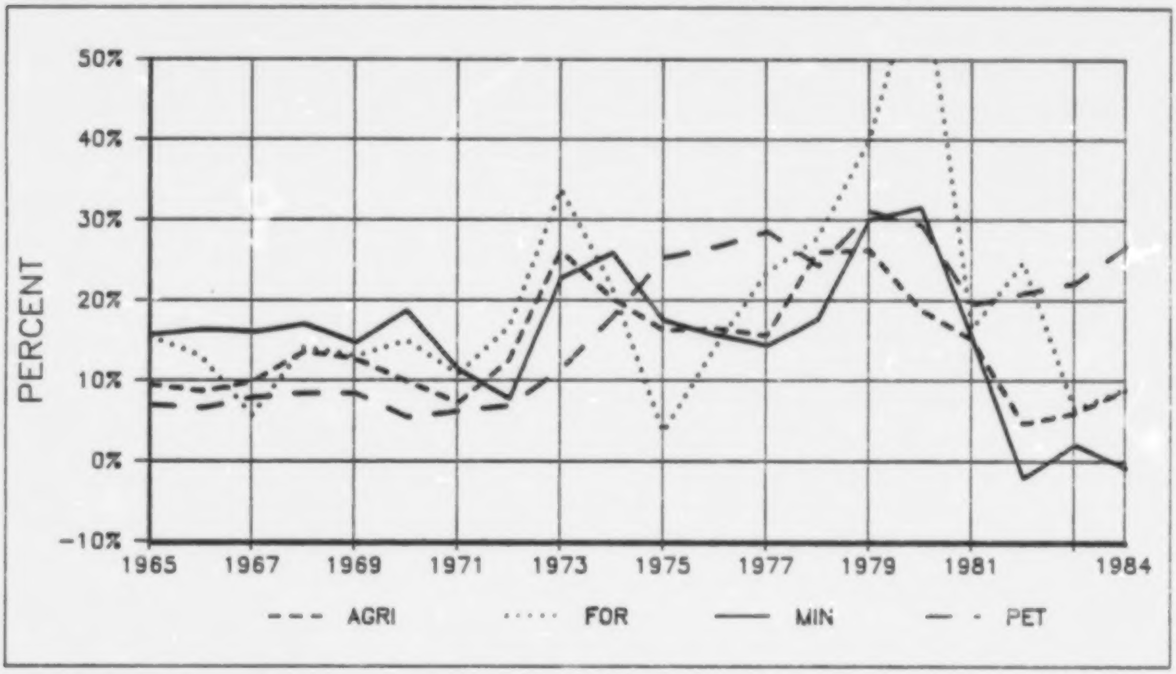
Fabricating activity is shown in figures 153, 154. Here again, forestry shows a great deal of volatility, while mineral fabricating is comparatively stable. The mineral industry averages slightly higher returns than forestry in this stage. Average returns to equity were 15.3 percent (pre-tax) and 9.8 percent (post-tax) for minerals, 13.4 percent (pre-tax) and 8.8 percent (post-tax) for forestry.

The returns to equity for total activity are depicted in figures 157, 158. Agriculture displays the highest and most stable returns over the entire period, although petroleum does have a higher average return for the 1975-1984 period. Before-tax average returns are 20.9 percent (agriculture), 17.2 percent (petroleum), 15.5 percent (minerals) and finally 1.4 percent (forestry). Both minerals and forestry are slightly below the total economy average of 15.1 percent. This is due mainly to the severe drop in returns since 1980. The similarity in returns for minerals and forestry is quite striking. Since 1972 the two industries have tracked each other closely, with the minerals industry showing marginally less volatility than that of forestry. The most recent returns, especially in post-tax form, show that forestry began to pull out of the recessionary trough in 1983 while the mineral industry continued to struggle through to the end of the period (1984). Unlike the other resource industries, average pre- and post-tax returns for the mineral industry fell between the 1965-74 and 1975-84 periods. Even forestry, which suffered similar drops in returns during the early eighties, managed to earn modestly higher returns in the post-1975 period.

The three stages of the mineral industry are shown in figures 159 and 160. As might be expected, the three stages move together over cycles, with primary activity showing the most volatility and fabricating the least.

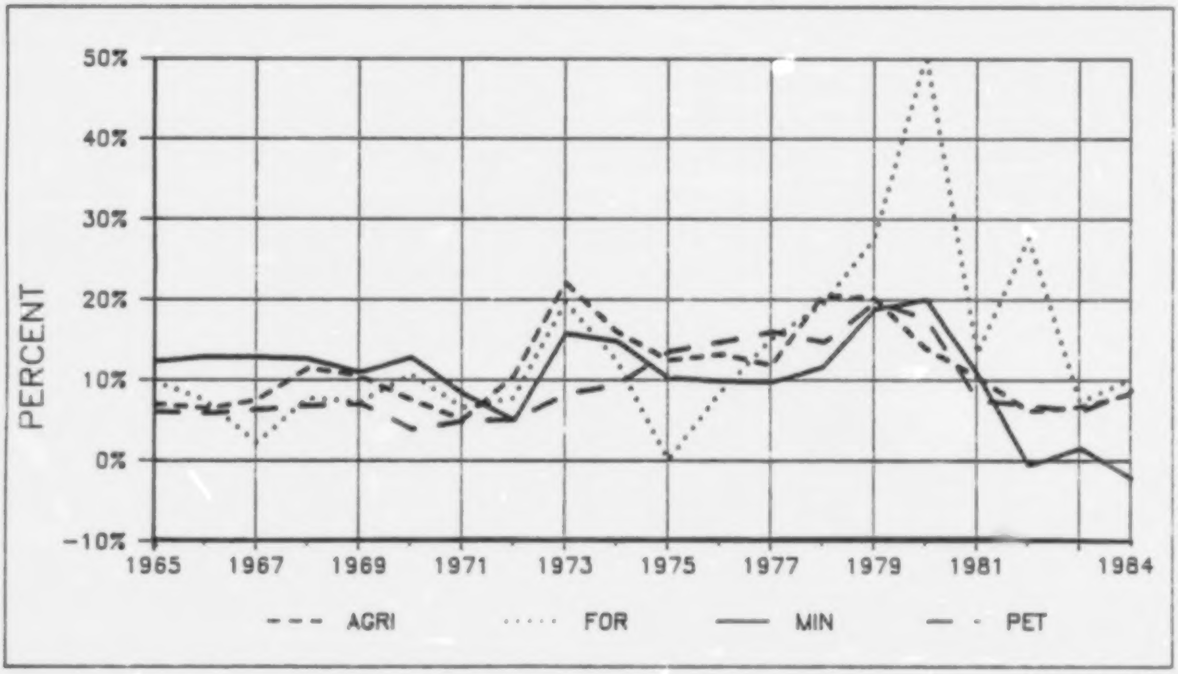
RETURN ON EQUITY: Primary Activity

Figure 145. Return on Equity, Primary Activity, Before Tax



(ref: table V1)

Figure 146. Return on Equity, Primary Activity, After Tax

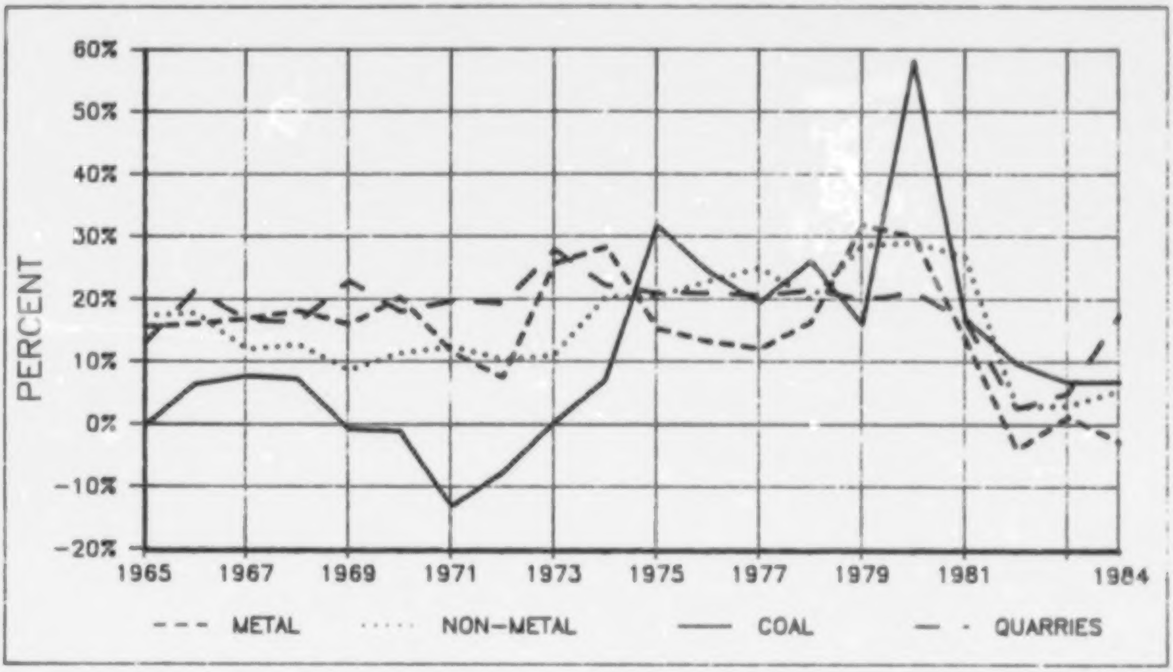


(ref: table W1)

Source: Statistics Canada, Catalogue 61-207, 61-208.

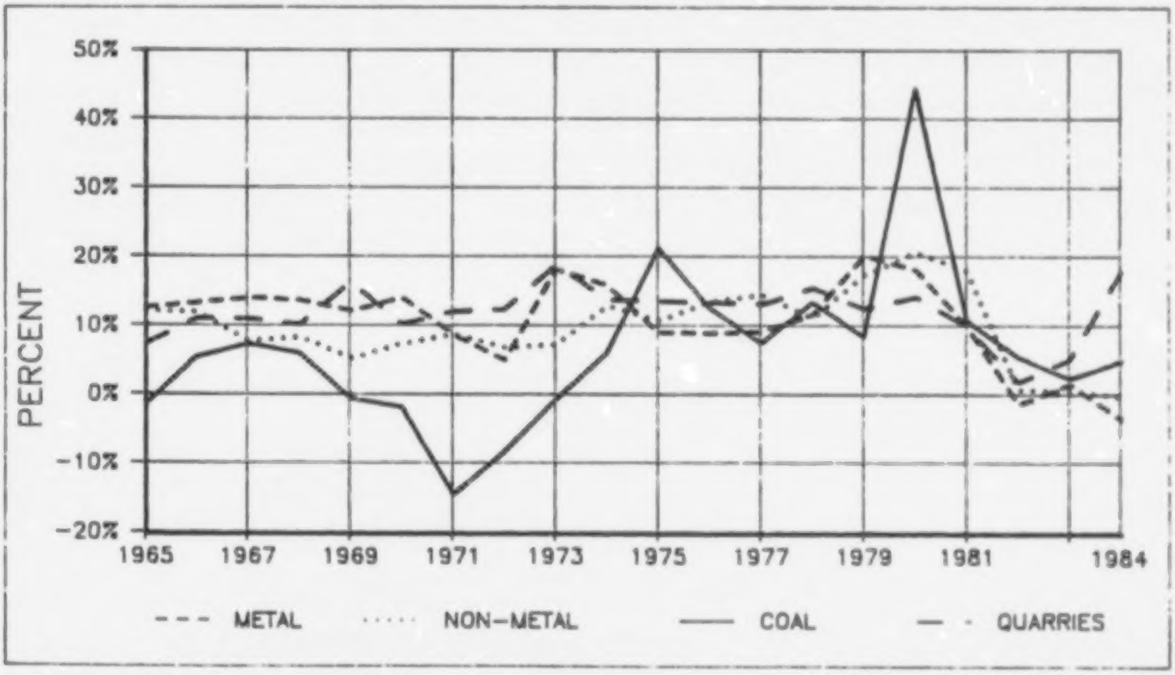
RETURN ON EQUITY: Mining Industry

Figure 147. Return on Equity, Mining Industry, Before Tax



(ref: table V2)

Figure 148. Return on Equity, Mining Industry, After Tax



(ref: table W2)

Source: Statistics Canada, Catalogue 61-207, 61-208.

RETURN ON EQUITY: Primary Activity, Mining Industry

Figure 149. Return on Equity, Primary Activity
Difference Between Before and After Tax Returns

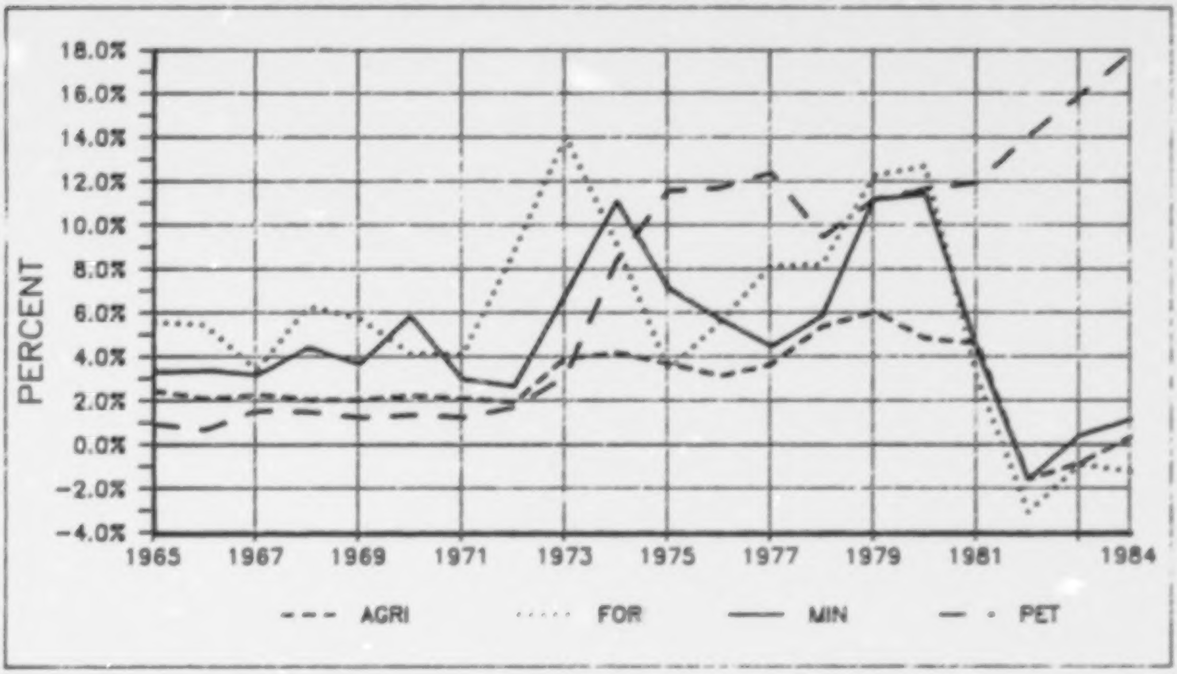
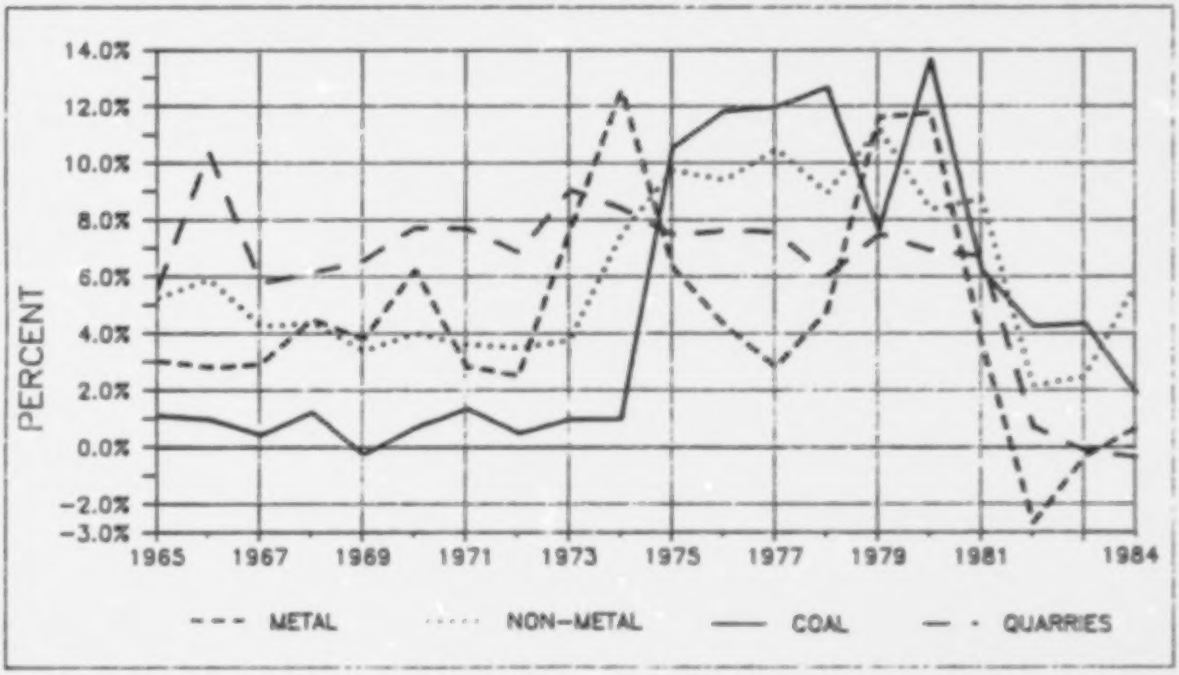


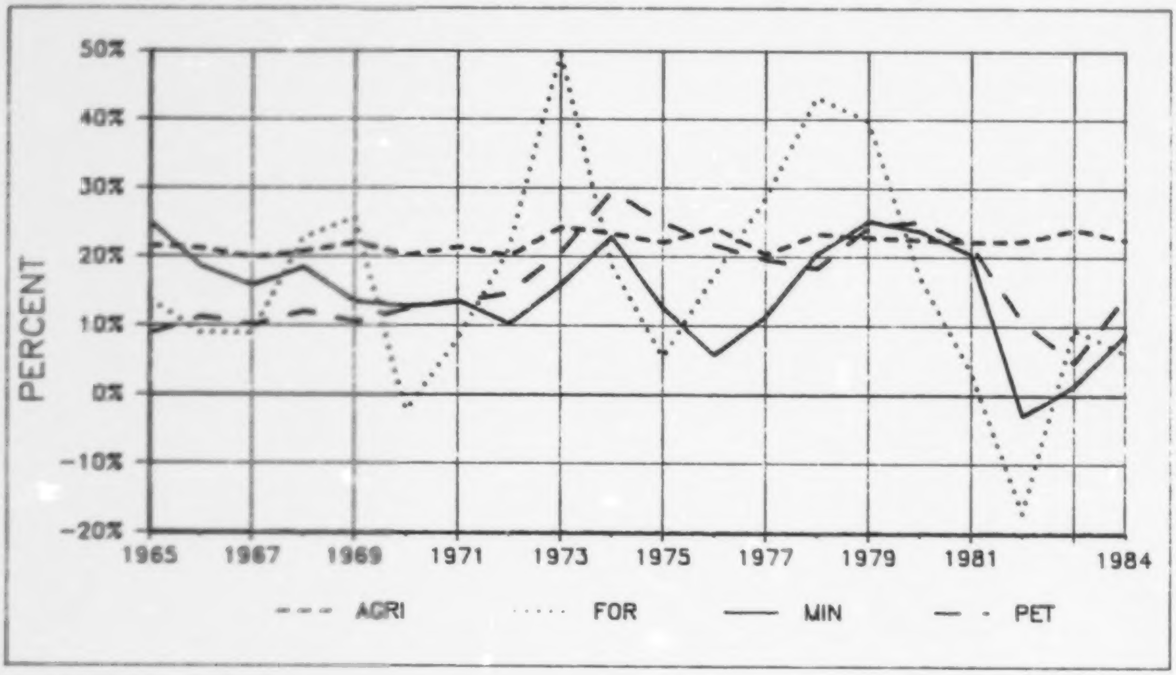
Figure 150. Return on Equity, Mining Industry
Difference Between Before and After Tax Returns



Source: Statistics Canada, Catalogue 61-207, 61-208.

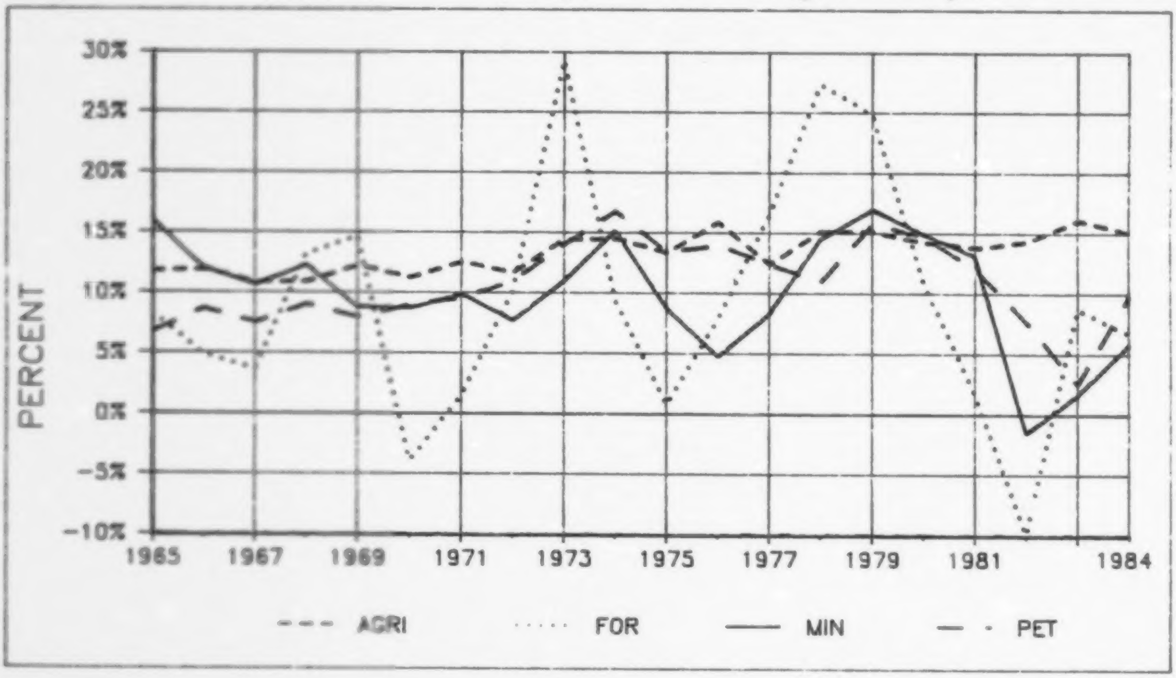
RETURN ON EQUITY: Processing Activity

Figure 151. Return on Equity, Processing Activity, Before Tax



(ref: table V3)

Figure 152. Return on Equity, Processing Activity, After Tax

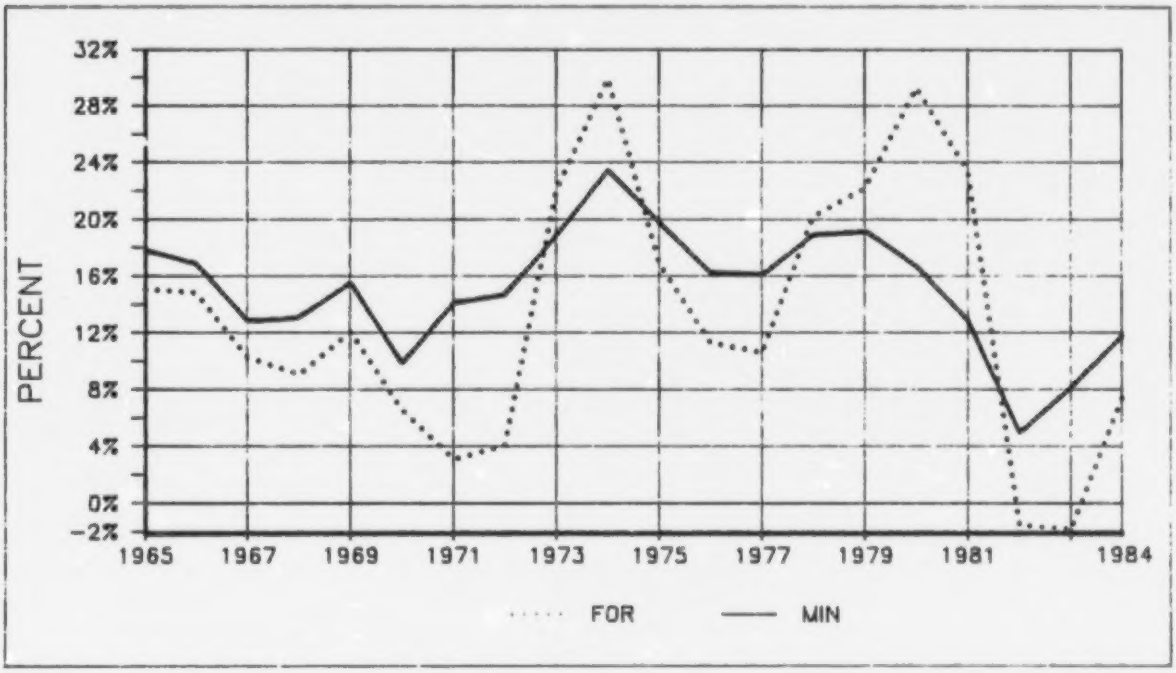


(ref: table W3)

Source: Statistics Canada, Catalogue 61-207, 61-208.

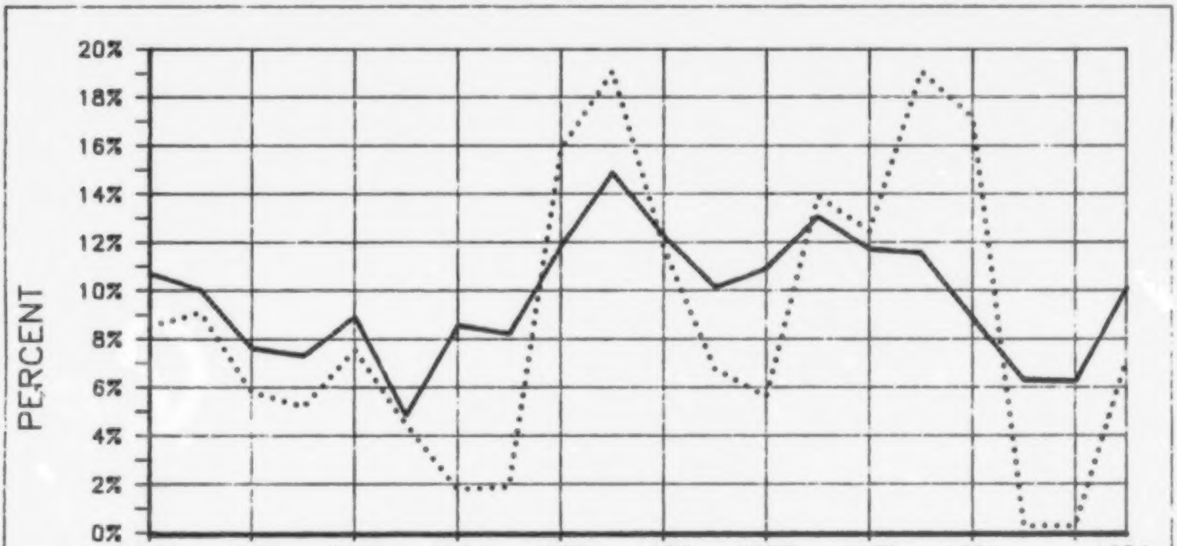
RETURN ON EQUITY: Fabricating Activity

Figure 153. Return on Equity, Fabricating Activity, Before Tax



(ref: table V4)

Figure 154. Return on Equity, Fabricating Activity, After Tax



(ref: table W4)

Source: Statistics Canada, Catalogue 61–207, 61–208.

RETURN ON EQUITY: Processing and Fabricating Activity

Figure 155. Return on Equity, Processing Activity
Difference Between Before and After Tax Returns

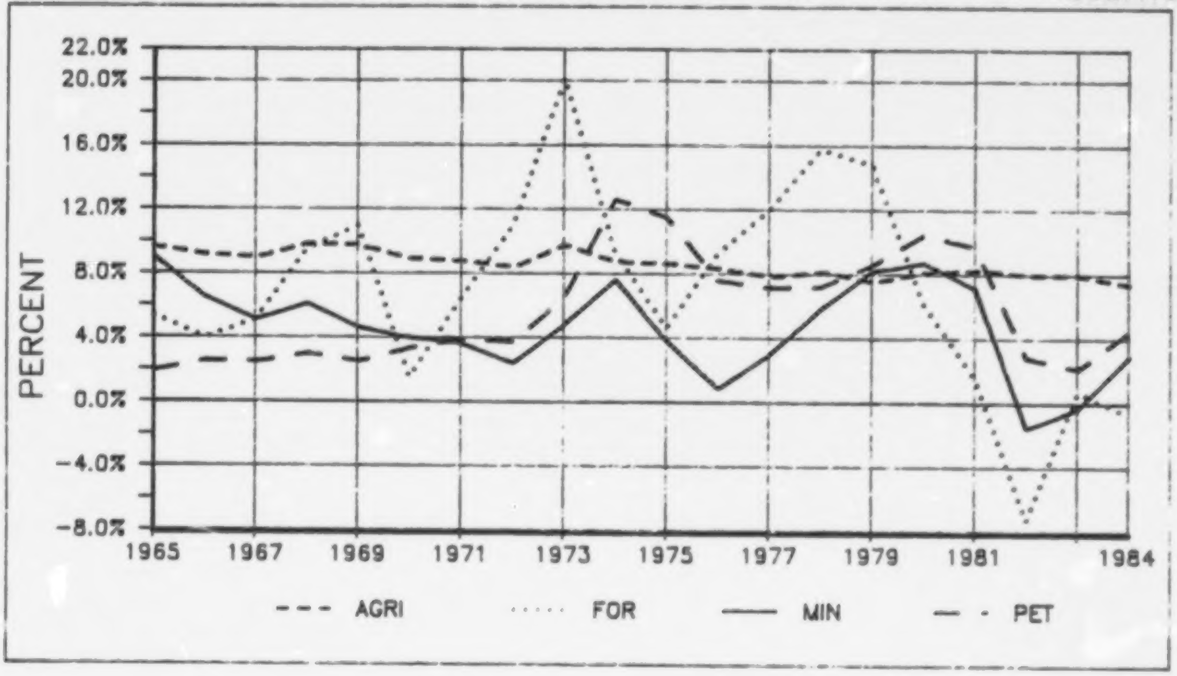
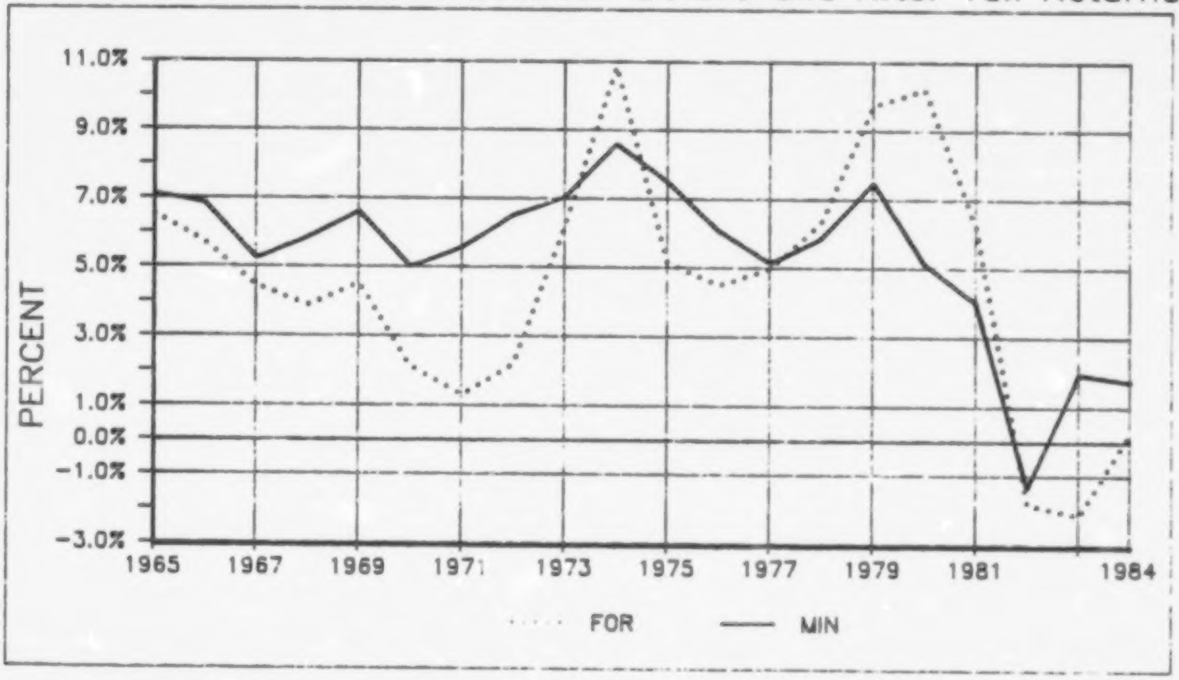


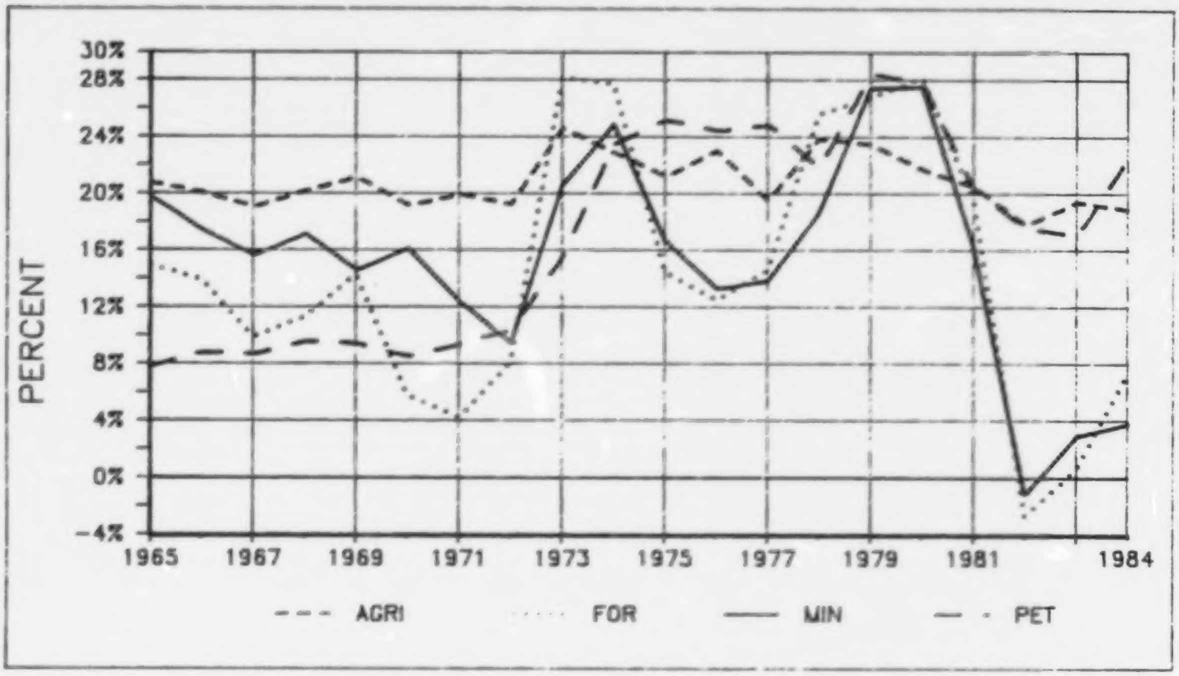
Figure 156. Return on Equity, Fabricating Activity
Difference Between Before and After Tax Returns



Source: Statistics Canada, Catalogue 61-207, 61-208.

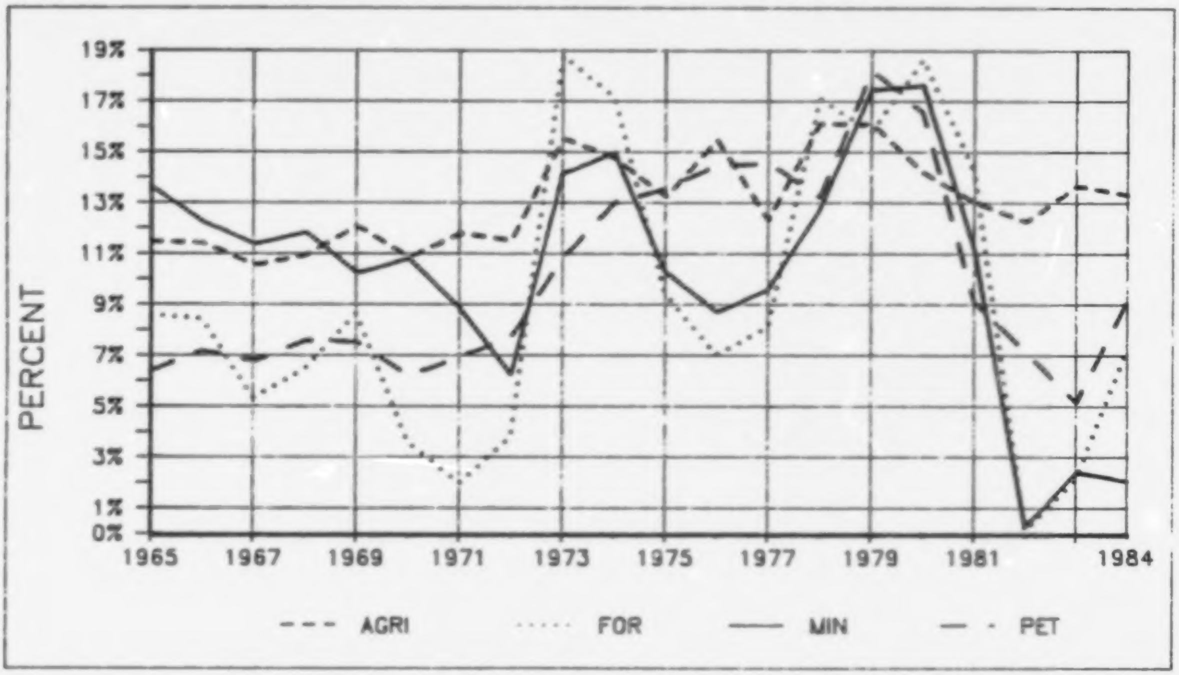
RETURN ON EQUITY: Total Activity

Figure 157. Return on Equity, Total Activity, Before Tax



(ref: table V5)

Figure 158. Return on Equity, Total Activity, After Tax

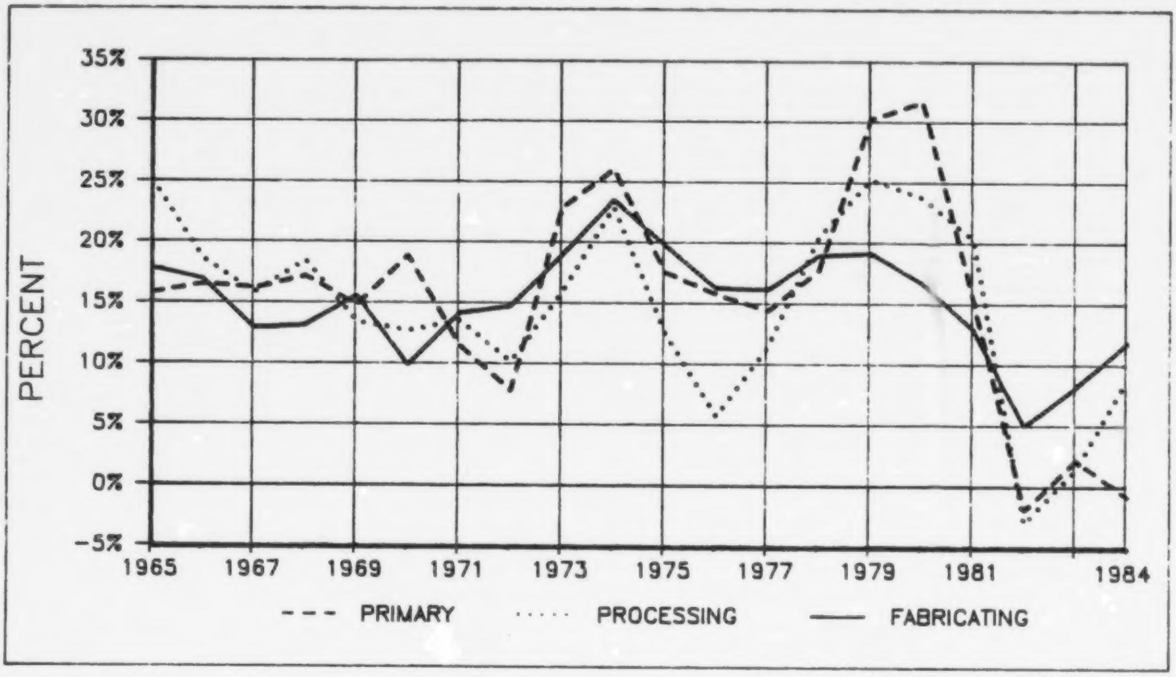


(ref: table W5)

Source: Statistics Canada, Catalogue 61-207, 61-208.

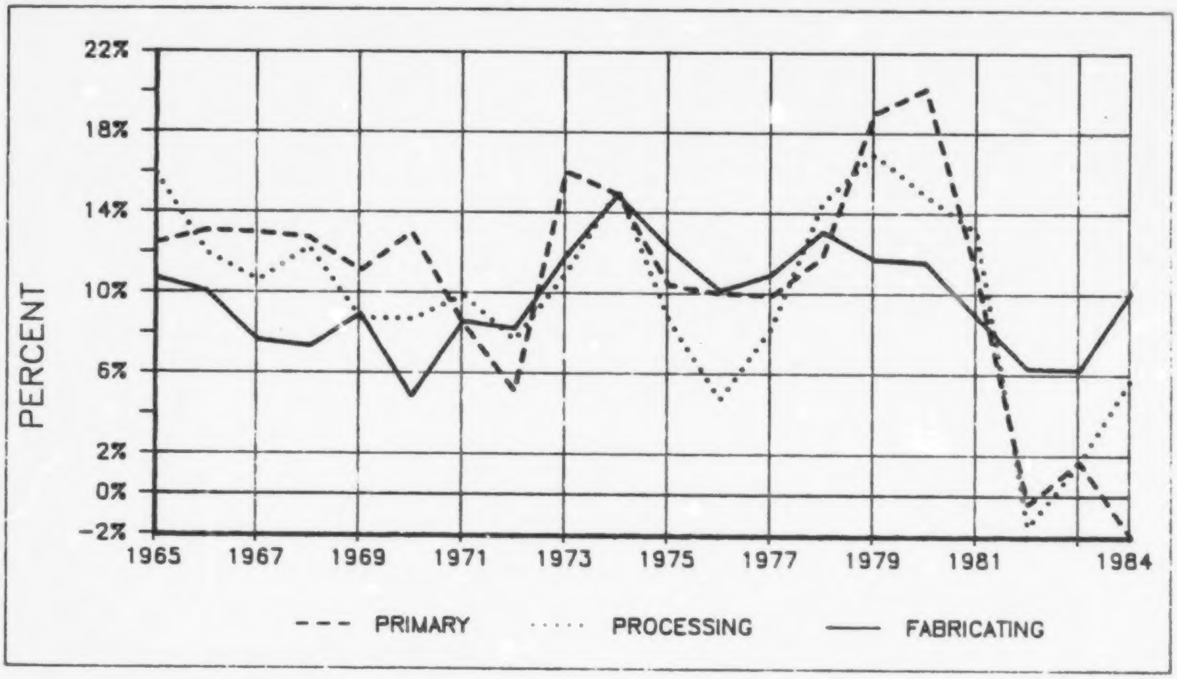
RETURN ON EQUITY: Mineral Sector

Figure 159. Return on Equity, Mineral Sector, Before Tax



(ref: table V6)

Figure 160. Return on Equity, Mineral Sector, After Tax



(ref: table W6)

Source: Statistics Canada, Catalogue 61–207, 61–208.

RETURN ON EQUITY: Total Activity, Mineral Sector

Figure 161. Return on Equity, Total Activity
Difference Between Before and After Tax Returns

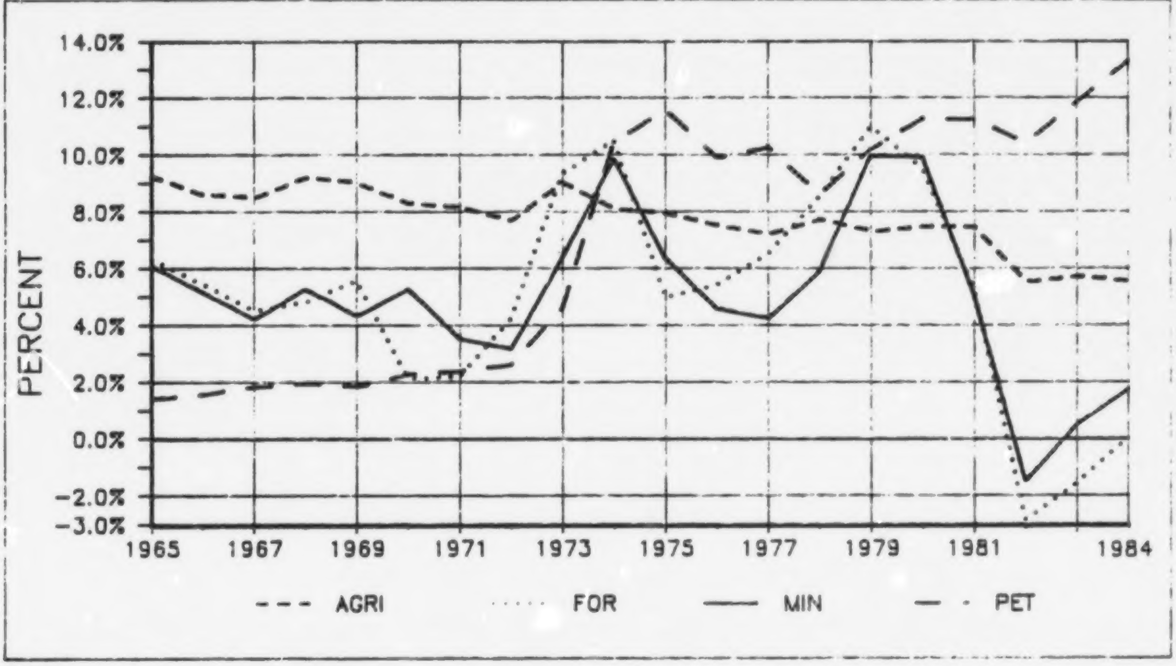
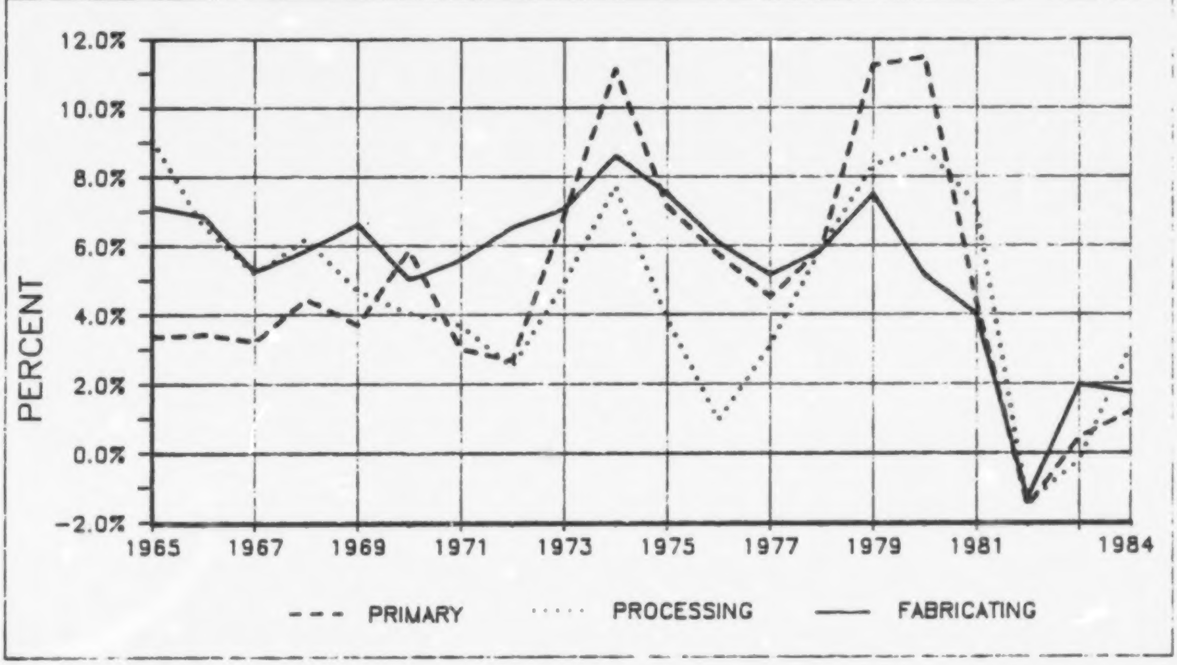


Figure 162. Return on Equity, Mineral Sector
Difference Between Before and After Tax Returns



Source: Statistics Canada, Catalogue 61-207, 61-208.

Table V

TABLE 1: PRIMARY ACTIVITY

RETURN ON EQUITY BEFORE TAX	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975
AGRICULTURE	9.76%	8.91%	10.17%	13.85%	12.93%	10.14%	7.48%	12.79%	26.41%	20.47%	16.49%
FORESTRY	15.76%	13.26%	5.93%	14.36%	13.29%	15.22%	11.01%	16.94%	34.03%	21.85%	3.80%
MINERALS	15.97%	16.67%	16.30%	17.31%	14.91%	19.03%	11.60%	7.91%	23.02%	26.17%	17.67%
PETROLEUM	7.21%	6.79%	8.18%	8.63%	8.58%	5.53%	6.44%	7.11%	11.65%	18.16%	25.51%
TOTAL RESOURCES PRIMARY	11.77%	11.73%	11.79%	12.74%	12.08%	12.58%	9.00%	7.84%	18.01%	22.33%	20.90%

TABLE 2: MINING INDUSTRY

RETURN ON EQUITY BEFORE TAX	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975
METAL MINES	15.98%	16.42%	17.27%	18.43%	16.19%	20.61%	11.77%	7.69%	26.04%	28.68%	15.57%
NON-METAL MINES	17.71%	18.10%	12.29%	13.00%	8.88%	11.64%	12.63%	10.58%	11.31%	20.68%	20.72%
COAL MINES	0.00%	6.74%	8.11%	7.49%	-0.55%	-0.88%	-12.86%	-7.40%	0.65%	7.50%	32.10%
QUARRIES	13.28%	21.75%	16.99%	16.56%	23.20%	18.23%	20.04%	19.55%	28.16%	22.39%	21.26%
TOTAL MINING	15.97%	16.67%	16.30%	17.31%	14.91%	18.99%	11.59%	7.91%	23.02%	26.17%	17.67%

TABLE 3: PROCESSING

RETURN ON EQUITY BEFORE TAX	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975
AGRICULTURE	21.68%	21.25%	20.01%	20.92%	22.17%	20.30%	21.47%	20.17%	24.43%	23.41%	22.15%
FORESTRY	13.79%	9.00%	8.95%	22.94%	25.84%	-2.22%	8.15%	21.23%	49.65%	18.88%	5.57%
MINERALS	25.15%	18.70%	15.93%	18.62%	13.57%	12.85%	13.68%	10.27%	16.02%	23.04%	12.71%
PETROLEUM	8.94%	11.39%	10.18%	12.22%	10.60%	12.55%	13.65%	14.86%	20.69%	29.59%	25.09%
TOTAL RESOURCES PROCESSING	18.45%	16.41%	15.36%	18.14%	15.96%	14.22%	15.78%	16.06%	23.27%	25.50%	20.09%

TABLE 4: FABRICATING

RETURN ON EQUITY BEFORE TAX	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975
FORESTRY	15.21%	14.96%	10.39%	9.20%	12.22%	6.71%	3.24%	4.24%	22.21%	30.05%	17.01%
MINERALS	18.00%	17.03%	13.02%	13.31%	15.74%	10.01%	14.33%	14.91%	19.08%	23.64%	19.90%
TOTAL RESOURCES FABRICATING	15.80%	15.45%	11.02%	10.17%	13.05%	7.53%	6.14%	7.23%	21.29%	28.26%	17.81%

TABLE 5: TOTAL ACTIVITY

RETURN ON EQUITY BEFORE TAX	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975
AGRICULTURE	20.87%	20.15%	19.18%	20.29%	21.25%	19.27%	20.06%	19.32%	24.70%	22.97%	21.28%
FORESTRY	15.03%	13.99%	9.98%	11.43%	14.37%	5.87%	4.30%	8.18%	28.25%	27.79%	14.54%
MINERALS	19.86%	17.54%	15.72%	17.28%	14.68%	16.25%	12.50%	9.52%	20.72%	25.00%	16.76%
PETROLEUM	7.97%	8.91%	8.76%	9.71%	9.50%	8.61%	9.50%	10.50%	15.61%	23.59%	25.31%
TOTAL RESOURCES TOTAL ACTIVITY	15.48%	14.56%	12.96%	14.25%	13.78%	12.26%	11.08%	11.04%	20.65%	24.72%	19.99%
TOTAL, ALL INDUSTRIES	12.70%	14.05%	12.96%	13.64%	13.65%	11.54%	12.89%	11.90%	15.95%	20.16%	17.91%

TABLE 6: MINERAL SECTOR

RETURN ON EQUITY BEFORE TAX	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975
PRIMARY	15.97%	16.67%	16.30%	17.31%	14.91%	19.03%	11.60%	7.91%	23.02%	26.17%	17.67%
PROCESSING	25.15%	18.70%	15.93%	18.62%	13.57%	12.85%	13.68%	10.27%	16.02%	23.04%	12.71%
FABRICATING	18.00%	17.03%	13.02%	13.31%	15.74%	10.01%	14.33%	14.91%	19.08%	23.64%	19.90%
TOTAL MINERAL SECTOR	19.86%	17.54%	15.72%	17.28%	14.68%	16.25%	12.50%	9.52%	20.72%	25.00%	16.76%

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                                                                          ===== AVERAGE ========  ====== C.O.V. ========
    1976    1977    1978    1979    1980    1981    1982    1983    1984   65-84   65-74   75-84   65-84   65-74   75-84

  16.75%  15.79%  26.28%  26.54%  19.07%  15.33%   4.90%   6.27%   9.13%  14.47%  13.29%  15.66%  44.48%  41.85%  44.78%
  14.35%  23.66%  28.01%  40.28%  63.45%  16.67%  24.98%   6.74%   9.27%  19.64%  16.16%  23.12%  68.74%  43.94%  73.66%
  15.86%  14.53%  17.90%  30.36%  31.82%  15.47%  -1.86%   2.30%  -0.70%  15.61%  16.89%  14.34%  55.44%  29.14%  77.15%
  26.79%  28.72%  24.37%  31.21%  29.48%  19.68%  21.12%  22.36%  26.93%  17.22%   8.83%  25.62%  52.86%  39.54%  13.89%
   -----   -----   -----   -----   -----   -----   -----   -----  ------

  21.12%  21.77%  21.87%  30.76%  30.20%  17.95%  13.00%  15.60%  18.05%  17.06%  12.99%  21.12%  36.70%  30.84%  25.59%
------------------------------------------------------------------------------------------------------------------------

                                                                          ===== AVERAGE ========  ====== C.O.V. ========
    1976    1977    1978    1979    1980    1981    1982    1983    1984   65-84   65-74   75-84   65-84   65-74   75-84

  13.42%  12.32%  16.69%  32.09%  30.18%  13.84%  -3.78%   1.53%  -2.60%  15.42%  17.91%  12.93%  61.58%  32.61%  89.48%
  23.15%  25.28%  20.28%  28.84%  29.28%  26.95%   3.06%   3.34%   5.72%  16.17%  13.68%  18.66%  49.00%  26.43%  53.62%
  24.66%  19.75%  26.42%  16.23%  58.36%  17.19%   9.95%   6.99%   7.12%  11.38%   0.88%  21.88% 135.39% 752.61%  66.30%
  21.23%  20.86%  21.82%  20.18%  21.43%  16.79%   2.78%   5.35%  17.74%  18.48%  20.01%  16.95%  30.72%  19.67%  39.25%
   -----   -----   -----   -----   -----   -----   -----   -----  ------

  15.86%  14.53%  17.90%  30.36%  31.82%  15.47%  -1.85%   2.30%  -0.70%  15.61%  16.88%  14.34%  55.43%  29.14%  77.13%
------------------------------------------------------------------------------------------------------------------------

                                                                          ===== AVERAGE ========  ====== C.O.V. ========
    1976    1977    1978    1979    1980    1981    1982    1983    1984   65-84   65-74   75-84   65-84   65-74   75-84

  24.42%  20.43%  23.50%  22.85%  22.56%  22.29%  22.52%  24.26%  22.68%  22.17%  21.58%  22.76%   6.14%   6.30%   4.74%
  17.35%  28.66%  43.31%  39.80%  17.30%   3.38% -17.03%   9.63%   6.13%  16.52%  17.62%  15.41%  93.58%  75.80% 111.82%
   5.83%  11.51%  20.59%  25.40%  23.87%  20.40%  -2.89%   1.53%   9.00%  14.79%  16.78%  12.80%  50.42%  26.33%  71.52%
  21.78%  19.65%  18.40%  24.51%  25.40%  21.94%  10.70%   4.82%  14.54%  16.57%  14.47%  18.68%  39.41%  40.91%  34.45%
   -----   -----   -----   -----   -----   -----   -----   -----  ------

  18.93%  18.75%  22.37%  25.67%  23.75%  20.38%   9.19%   9.84%  15.15%  18.16%  17.91%  18.41%  24.48%  19.41%  28.39%
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                                                                          ===== AVERAGE ========  ====== C.O.V. ========
    1976    1977    1978    1979    1980    1981    1982    1983    1984   65-84   65-74   75-84   65-84   65-74   75-84

  11.38%  10.73%  20.39%  22.33%  29.41%  23.47%  -1.44%  -1.71%   7.61%  13.38%  12.84%  13.92%  67.12%  61.18%  71.48%
  16.36%  16.25%  19.12%  19.35%  16.83%  13.02%   5.12%   8.35%  11.99%  15.27%  15.91%  14.63%  27.68%  22.57%  32.08%
   -----   -----   -----   -----   -----   -----   -----   -----  ------

  12.81%  12.32%  20.00%  21.53%  25.99%  20.55%   0.52%   1.35%   8.93%  13.89%  13.59%  14.18%  53.43%  48.48%  57.50%
------------------------------------------------------------------------------------------------------------------------

                                                                          ===== AVERAGE ========  ====== C.O.V. ========
    1976    1977    1978    1979    1980    1981    1982    1983    1984   65-84   65-74   75-84   65-84   65-74   75-84

  23.13%  19.64%  23.99%  23.56%  21.79%  20.58%  17.92%  19.54%  18.96%  20.92%  20.80%  21.04%   8.77%   8.12%   9.33%
  12.59%  14.76%  25.73%  26.91%  28.28%  19.58%  -2.60%   0.71%   7.47%  14.36%  13.92%  14.80%  63.17%  56.17%  68.60%
  13.40%  13.99%  18.78%  27.58%  27.70%  16.35%  -1.07%   3.07%   3.93%  15.48%  16.91%  14.05%  47.20%  24.39%  65.88%
  24.52%  24.98%  21.93%  28.53%  27.90%  20.45%  17.68%  17.12%  22.65%  17.19%  11.27%  23.11%  42.11%  40.65%  16.00%
   -----   -----   -----   -----   -----   -----   -----   -----  ------

  18.74%  19.00%  21.76%  27.42%  27.21%  19.15%  10.00%  11.82%  15.78%  17.08%  15.08%  19.09%  30.46%  27.47%  28.20%

  16.96%  16.15%  18.27%  21.66%  20.74%  17.25%   8.95%  10.83%  13.07%  15.06%  13.95%  16.18%  22.61%  17.05%  23.97%
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                                                                          ===== AVERAGE ========  ====== C.O.V. ========
    1976    1977    1978    1979    1980    1981    1982    1983    1984   65-84   65-74   75-84   65-84   65-74   75-84

  15.86%  14.53%  17.90%  30.36%  31.82%  15.47%  -1.86%   2.30%  -0.70%  15.61%  16.89%  14.34%  55.44%  29.14%  77.15%
   5.83%  11.51%  20.59%  25.40%  23.87%  20.40%  -2.89%   1.53%   9.00%  14.79%  16.78%  12.80%  50.42%  26.33%  71.52%
  16.36%  16.25%  19.12%  19.35%  16.83%  13.02%   5.12%   8.35%  11.99%  15.27%  15.91%  14.63%  27.68%  22.57%  32.08%
   -----   -----   -----   -----   -----   -----   -----   -----  ------

  13.40%  13.99%  18.78%  27.58%  27.70%  16.35%  -1.07%   3.07%   3.93%  15.48%  16.91%  14.05%  47.20%  24.39%  65.88%
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```

Table W

TABLE 1: PRIMARY ACTIVITY

RETURN ON EQUITY AFTER TAX	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975
AGRICULTURE	7.24%	6.72%	7.79%	11.74%	10.77%	7.78%	5.29%	10.78%	22.35%	16.21%	12.72%
FORESTRY	10.10%	7.73%	2.44%	8.00%	7.45%	11.00%	6.83%	8.06%	19.89%	12.66%	0.27%
MINERALS	12.55%	13.18%	13.05%	12.79%	11.16%	13.10%	8.55%	5.19%	16.10%	14.99%	10.48%
PETROLEUM	6.20%	6.04%	6.54%	7.06%	7.26%	4.07%	5.12%	5.30%	8.47%	9.69%	13.81%
TOTAL RESOURCES PRIMARY	9.42%	9.53%	9.37%	9.75%	9.38%	8.81%	6.78%	5.50%	12.86%	12.71%	11.93%

TABLE 2: MINING INDUSTRY

RETURN ON EQUITY AFTER TAX	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975
METAL MINES	12.89%	13.55%	14.27%	13.86%	12.33%	14.30%	8.87%	5.13%	18.35%	16.03%	9.17%
NON-METAL MINES	12.37%	12.12%	7.95%	8.56%	5.41%	7.56%	8.96%	7.03%	7.47%	13.10%	10.91%
COAL MINES	-1.16%	5.70%	7.62%	6.19%	-0.37%	-1.66%	-14.30%	-7.96%	-0.42%	6.42%	21.48%
QUARRIES	7.59%	11.30%	11.13%	10.33%	16.55%	10.42%	12.27%	12.63%	19.04%	13.93%	13.74%
TOTAL MINING	12.54%	13.17%	13.04%	12.79%	11.16%	13.06%	8.55%	5.19%	16.10%	15.00%	10.48%

TABLE 3: PROCESSING

RETURN ON EQUITY AFTER TAX	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975
AGRICULTURE	11.86%	11.96%	10.89%	10.95%	12.31%	11.28%	12.60%	11.68%	14.52%	14.57%	13.39%
FORESTRY	8.32%	4.91%	3.71%	13.25%	14.73%	-3.86%	1.53%	10.15%	29.37%	9.47%	0.82%
MINERALS	16.00%	12.05%	10.68%	12.36%	8.82%	8.76%	9.95%	7.73%	11.06%	15.26%	8.78%
PETROLEUM	6.86%	8.71%	7.58%	9.08%	7.98%	9.06%	9.63%	11.02%	14.08%	16.83%	13.47%
TOTAL RESOURCES PROCESSING	11.50%	10.47%	9.49%	11.19%	10.00%	8.91%	10.13%	10.44%	14.86%	15.25%	11.48%

TABLE 4: FABRICATING

RETURN ON EQUITY AFTER TAX	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975
FORESTRY	8.61%	9.19%	5.87%	5.25%	7.63%	4.54%	1.87%	1.99%	15.95%	19.14%	11.82%
MINERALS	10.81%	10.12%	7.70%	7.38%	9.04%	4.93%	8.67%	8.30%	11.94%	14.97%	12.35%
TOTAL RESOURCES FABRICATING	9.08%	9.41%	6.31%	5.75%	7.96%	4.63%	3.65%	3.75%	14.77%	17.98%	11.97%

TABLE 5: TOTAL ACTIVITY

RETURN ON EQUITY AFTER TAX	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975
AGRICULTURE	11.55%	11.49%	10.63%	11.02%	12.16%	10.92%	11.86%	11.57%	15.59%	14.81%	13.29%
FORESTRY	8.65%	8.48%	5.40%	6.54%	8.72%	3.67%	2.04%	3.88%	18.84%	17.21%	9.48%
MINERALS	13.70%	12.32%	11.45%	11.92%	10.29%	10.90%	8.92%	6.29%	14.25%	15.06%	10.34%
PETROLEUM	6.49%	7.27%	6.84%	7.66%	7.59%	6.26%	7.04%	7.80%	10.92%	13.08%	13.65%
TOTAL RESOURCES TOTAL ACTIVITY	10.24%	9.92%	8.77%	9.47%	9.35%	8.07%	7.50%	7.18%	13.98%	14.72%	11.76%
TOTAL, ALL INDUSTRIES	8.31%	9.62%	8.84%	9.17%	9.00%	7.47%	8.76%	7.66%	10.40%	13.04%	11.45%

TABLE 6: MINERAL SECTOR

RETURN ON EQUITY AFTER TAX	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975
PRIMARY	12.55%	13.18%	13.05%	12.79%	11.16%	13.10%	8.55%	5.19%	16.10%	14.99%	10.48%
PROCESSING	16.00%	12.05%	10.68%	12.36%	8.82%	8.76%	9.95%	7.73%	11.06%	15.26%	8.78%
FABRICATING	10.81%	10.12%	7.70%	7.38%	9.04%	4.93%	8.67%	8.30%	11.94%	14.97%	12.35%
TOTAL MINERAL SECTOR	13.70%	12.32%	11.45%	11.92%	10.29%	10.90%	8.92%	6.29%	14.25%	15.06%	10.34%

* * *

									AVERAGE			C.O.V.		
1976	1977	1978	1979	1980	1981	1982	1983	1984	65-84	65-74	75-84	65-84	65-74	75-84
13.53%	12.03%	20.80%	20.39%	14.18%	10.66%	6.40%	7.00%	8.67%	11.65%	10.67%	12.64%	42.10%	46.05%	37.17%
8.71%	15.41%	19.70%	27.92%	50.66%	13.55%	27.98%	7.56%	10.44%	13.82%	9.42%	18.22%	79.89%	46.18%	74.87%
10.07%	9.96%	11.93%	19.07%	20.29%	11.02%	-0.36%	1.78%	-1.97%	10.65%	12.07%	9.23%	52.92%	24.77%	77.04%
14.98%	16.22%	14.83%	19.94%	17.72%	7.62%	6.94%	6.32%	8.97%	9.65%	6.57%	12.74%	47.95%	23.76%	36.36%
-----	-----	-----	-----	-----	-----	-----	-----	------						
12.59%	13.25%	14.00%	19.72%	18.86%	9.03%	4.91%	5.11%	6.00%	10.48%	9.41%	11.54%	38.25%	22.67%	43.58%

									AVERAGE			C.O.V.		
1976	1977	1978	1979	1980	1981	1982	1983	1984	65-84	65-74	75-84	65-84	65-74	75-84
9.06%	9.44%	11.81%	20.40%	18.31%	10.13%	-1.17%	1.77%	-3.37%	10.76%	12.96%	8.55%	56.98%	26.91%	85.32%
13.69%	14.72%	11.27%	17.55%	20.84%	18.13%	0.83%	0.78%	-0.10%	9.96%	9.05%	10.86%	55.89%	27.15%	67.83%
12.73%	7.68%	13.67%	8.54%	44.63%	10.90%	5.64%	2.55%	5.16%	6.65%	0.01%	13.30%	173.88%	1269.51%	87.36%
13.50%	13.26%	15.72%	12.62%	14.46%	10.02%	2.02%	5.41%	18.05%	12.20%	12.52%	11.88%	32.29%	24.97%	38.63%
-----	-----	-----	-----	-----	-----	-----	-----	------						
10.07%	9.96%	11.93%	19.07%	20.29%	11.02%	-0.36%	1.78%	-1.97%	10.64%	12.06%	9.23%	52.92%	24.77%	77.03%

									AVERAGE			C.O.V.		
1976	1977	1978	1979	1980	1981	1982	1983	1984	65-84	65-74	75-84	65-84	65-74	75-84
15.96%	12.44%	15.20%	15.18%	14.27%	13.85%	14.41%	16.15%	15.13%	13.43%	12.26%	14.60%	12.36%	10.21%	7.52%
7.90%	16.52%	27.39%	24.89%	11.01%	1.74%	-9.86%	8.76%	6.72%	9.37%	9.16%	9.59%	102.99%	93.50%	110.84%
4.83%	8.35%	14.62%	17.01%	14.97%	13.15%	-1.49%	1.70%	5.90%	10.02%	11.27%	8.78%	46.63%	22.98%	66.30%
14.06%	12.40%	11.00%	15.77%	14.78%	12.10%	7.74%	2.56%	9.85%	10.73%	10.08%	11.37%	31.84%	29.36%	32.59%
-----	-----	-----	-----	-----	-----	-----	-----	------						
12.25%	11.82%	14.30%	16.70%	14.39%	12.03%	6.44%	6.54%	10.31%	11.43%	11.22%	11.63%	23.01%	18.19%	26.61%

									AVERAGE			C.O.V.		
1976	1977	1978	1979	1980	1981	1982	1983	1984	65-84	65-74	75-84	65-84	65-74	75-84
6.82%	5.68%	13.98%	12.52%	19.14%	17.20%	0.33%	0.38%	7.25%	8.76%	8.00%	9.51%	66.56%	66.94%	64.90%
10.22%	11.04%	13.17%	11.78%	11.63%	8.95%	6.39%	6.32%	10.19%	9.79%	9.39%	10.20%	25.22%	27.96%	21.88%
-----	-----	-----	-----	-----	-----	-----	-----	------						
7.79%	7.23%	13.73%	12.32%	17.09%	14.89%	2.14%	2.18%	8.14%	9.04%	8.33%	9.75%	52.45%	54.19%	49.81%

									AVERAGE			C.O.V.		
1976	1977	1978	1979	1980	1981	1982	1983	1984	65-84	65-74	75-84	65-84	65-74	75-84
15.55%	12.37%	16.19%	16.19%	14.25%	13.07%	12.32%	13.75%	13.36%	13.10%	12.16%	14.03%	13.47%	13.08%	9.92%
7.09%	8.20%	17.15%	15.86%	18.71%	14.28%	0.18%	2.21%	7.35%	9.20%	8.34%	10.05%	62.11%	63.69%	59.33%
8.77%	9.70%	12.81%	17.54%	17.72%	11.26%	0.36%	2.48%	2.11%	10.41%	11.51%	9.31%	44.04%	21.55%	62.13%
14.56%	14.65%	13.26%	18.27%	16.58%	9.15%	7.21%	5.20%	9.27%	10.14%	8.09%	12.18%	37.49%	25.53%	33.12%
-----	-----	-----	-----	-----	-----	-----	-----	------						
11.59%	11.68%	14.07%	17.44%	16.97%	10.88%	5.05%	5.18%	7.79%	10.58%	9.92%	11.24%	32.33%	24.34%	36.35%
11.28%	10.83%	12.77%	15.19%	14.37%	11.90%	7.33%	8.25%	10.44%	10.30%	9.23%	11.38%	21.61%	16.38%	20.25%

									AVERAGE			C.O.V.		
1976	1977	1978	1979	1980	1981	1982	1983	1984	65-84	65-74	75-84	65-84	65-74	75-84
10.07%	9.96%	11.93%	19.07%	20.29%	11.02%	-0.36%	1.78%	-1.97%	10.65%	12.07%	9.23%	52.92%	24.77%	77.04%
4.83%	8.35%	14.62%	17.01%	14.97%	13.15%	-1.49%	1.70%	5.90%	10.02%	11.27%	8.78%	46.63%	22.98%	66.30%
10.22%	11.04%	13.17%	11.78%	11.63%	8.95%	6.39%	6.32%	10.19%	9.79%	9.39%	10.20%	25.22%	27.96%	21.88%
-----	-----	-----	-----	-----	-----	-----	-----	------						
8.77%	9.70%	12.81%	17.54%	17.72%	11.26%	0.36%	2.48%	2.11%	10.41%	11.51%	9.31%	44.04%	21.55%	62.13%

Debt to Equity

The debt-to-equity ratio gives an indication of each industry's financial structure. It should be emphasized that a high debt-to-equity ratio is not necessarily a bad sign for an industry, and by the same token, a low ratio is not necessarily a good sign. For example, expanding companies typically have higher debt-to-equity ratios than those of stable, well-established firms. Thus, a high ratio can be a sign of healthy growth within an industry.

However, a high debt-to-equity ratio can indicate potential problems. A large debt load leaves a firm (or industry) vulnerable to increases in interest rates or downturns in the economy. Debt repayments must (in general) be met if the firm is to remain solvent, regardless of profit circumstances. Dividend payments, on the other hand, can be suspended if necessary. Therefore, while a high debt-to-equity ratio should not be seen as inevitably bad, it does limit a firm's "room to maneuver".

The resource sector in general has a debt-to-equity ratio which averages well below that of the economy-wide average for the 1965-84 period. This can be seen in figures 163 through 168. For example, in the primary stage (figure 163) the average debt to equity ratio (1965-84) for the four resource industries is 0.30, while for the economy as a whole the average is 0.69 (the "ALL" line in the figure). Only agriculture approaches this level, with an average ratio of 0.62. Mining averaged 0.32, petroleum averaged 0.25, and forestry 0.34. The trend overall in the primary stage (and other stages) has been rising since 1965, although in 1984 the debt ratios have fallen or leveled off.

The subcategories of the mining industry are shown in figure 164. Coal had the highest debt ratio, averaging 0.47 from 1965 to 1984. Coal has also been the most volatile, ranging from highs of 1.07 in 1971 to a low of 0.15 in 1976. Three of the four mining sub-industries have exhibited a rising debt ratio overall; the exception is coal, which was so volatile that no over-all trend could be discerned. The "spike" in coal's debt ratio in 1970-72 was due to a simultaneous increase in debt and decrease in equity.

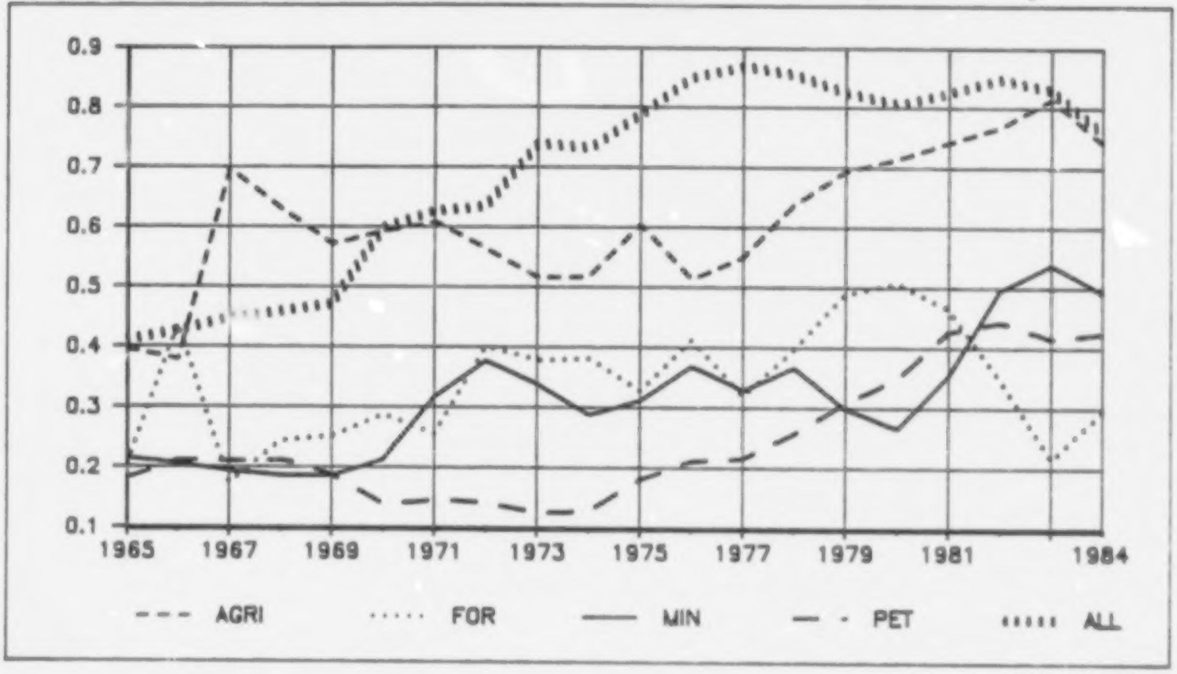
Forestry has the highest ratio in the processing stage of activity (figure 165), averaging 0.56 over the entire period. The overall averages for the other industries are: 0.22 for agriculture, 0.41 for minerals and .20 for petroleum. All four industries averaged higher in the post 1975 period, although all remained well below the economy-wide average of 0.69 (1965-84).

The fabricating stage for minerals and forestry is shown in figure 166. The overall average ratios were 0.37 for the minerals industry and 0.43 for forestry. Both industries are once again well below the economy average.

Figure 167 depicts the debt-to-equity ratio for total activity. As can be seen, all four resource industries are well below the economy-wide ratio in most years. For total activity, minerals averaged 0.35 (1965-84), petroleum 0.23, forestry 0.45 and agriculture 0.28. As was the case for the economy-wide average, the resource industries showed rising ratios from 1965 to 1982, leveling off since that time. Figure 168 illustrates the three stages of the mineral industry.

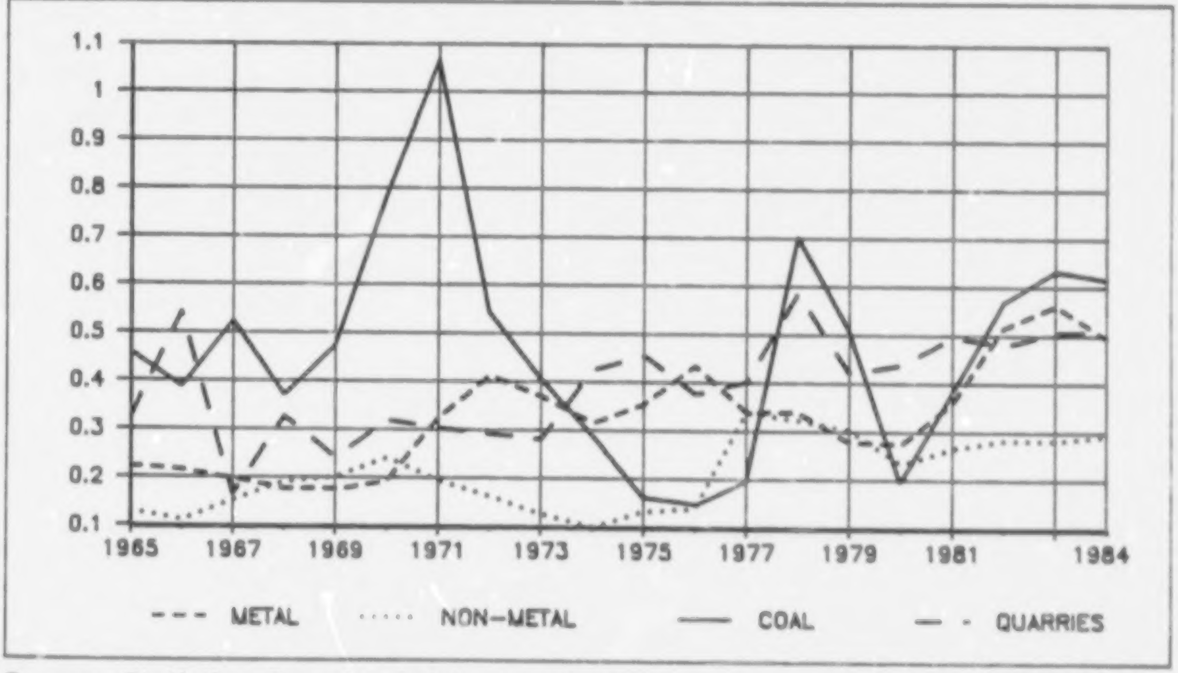
DEBT TO EQUITY: Primary Activity, Mining Industry

Figure 163. Debt to Equity Ratio, Primary Activity



(ref: table X1)

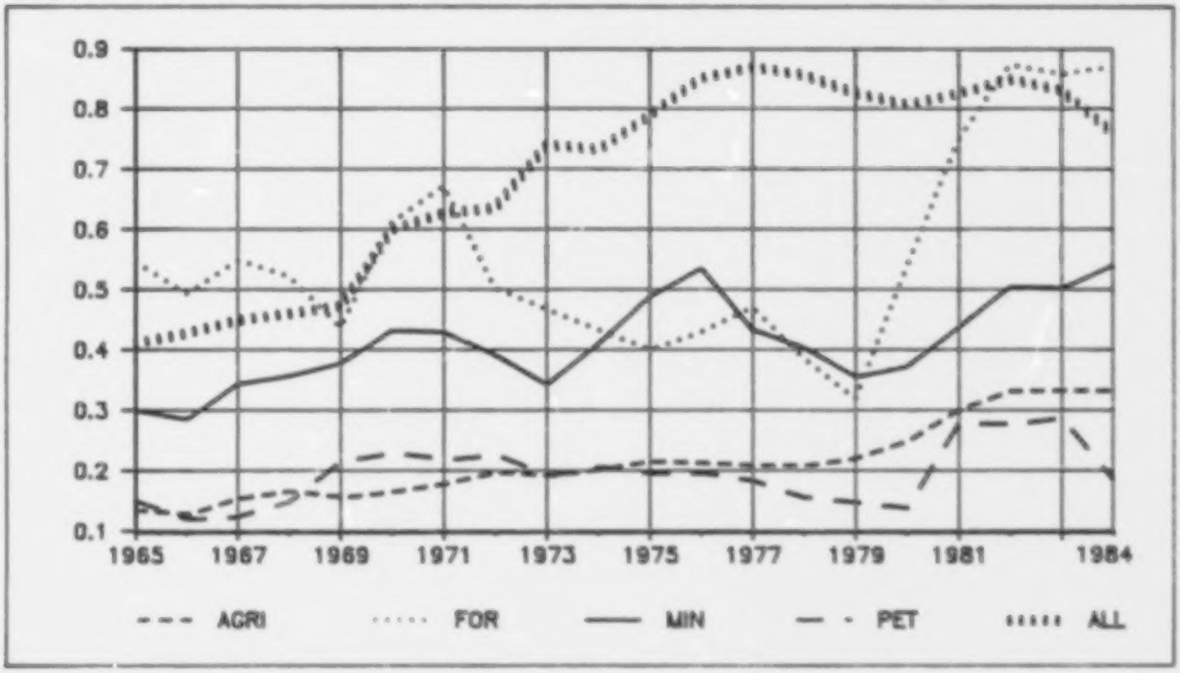
Figure 164. Debt To Equity Ratio, Mining Industry



Source: Statistics Canada, Catalogue 61-207. (ref: table X2)
The term "debt" refers to net long-term debt as defined by Statistics Canada which includes long-term bank loans, mortgages, bonds and other debt.

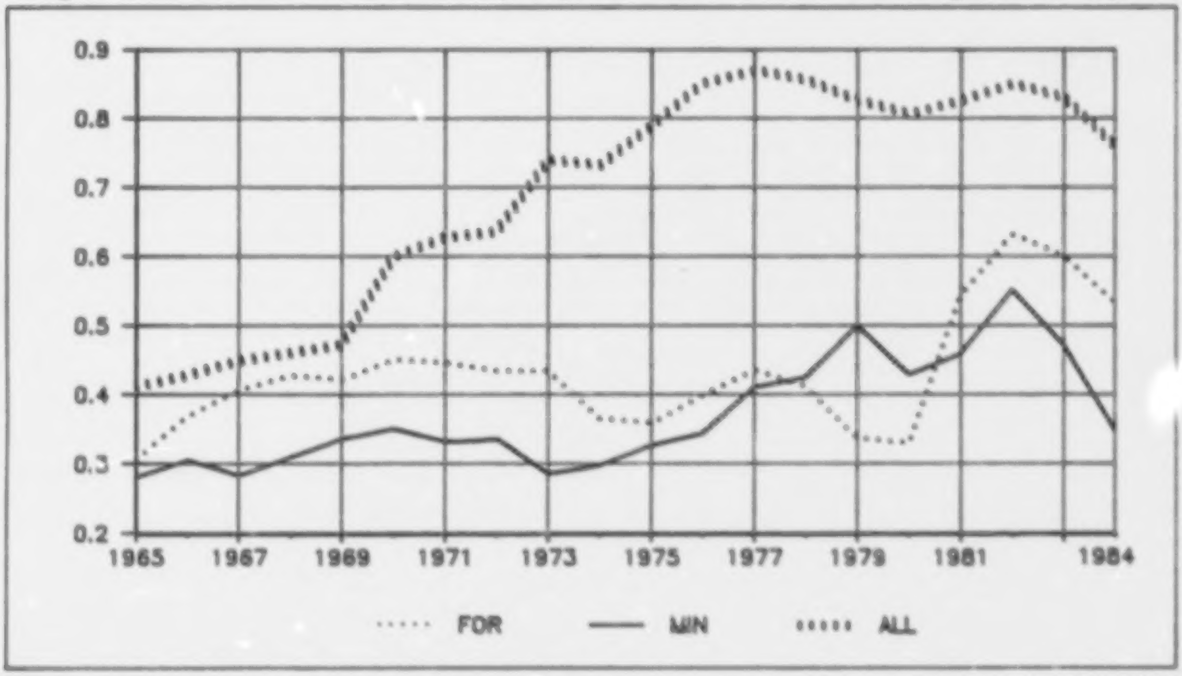
DEBT TO EQUITY: Processing and Fabricating Activity

Figure 165. Debt to Equity Ratio, Processing Activity



(ref: table X3)

Figure 166. Debt To Equity Ratio, Fabricating Activity

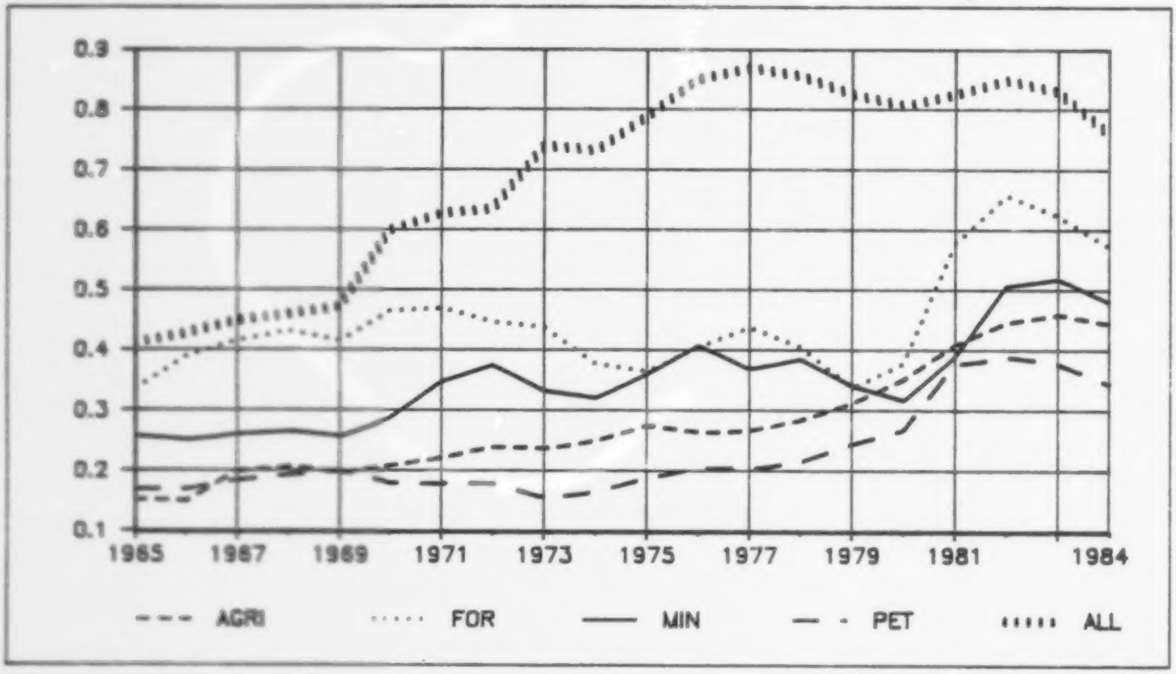


Source: Statistics Canada, Catalogue 61–207.
The term "debt" refers to net long–term debt as defined by Statistics Canada which includes long–term bank loans, mortgages, bonds and other debt.

(ref: table X4)

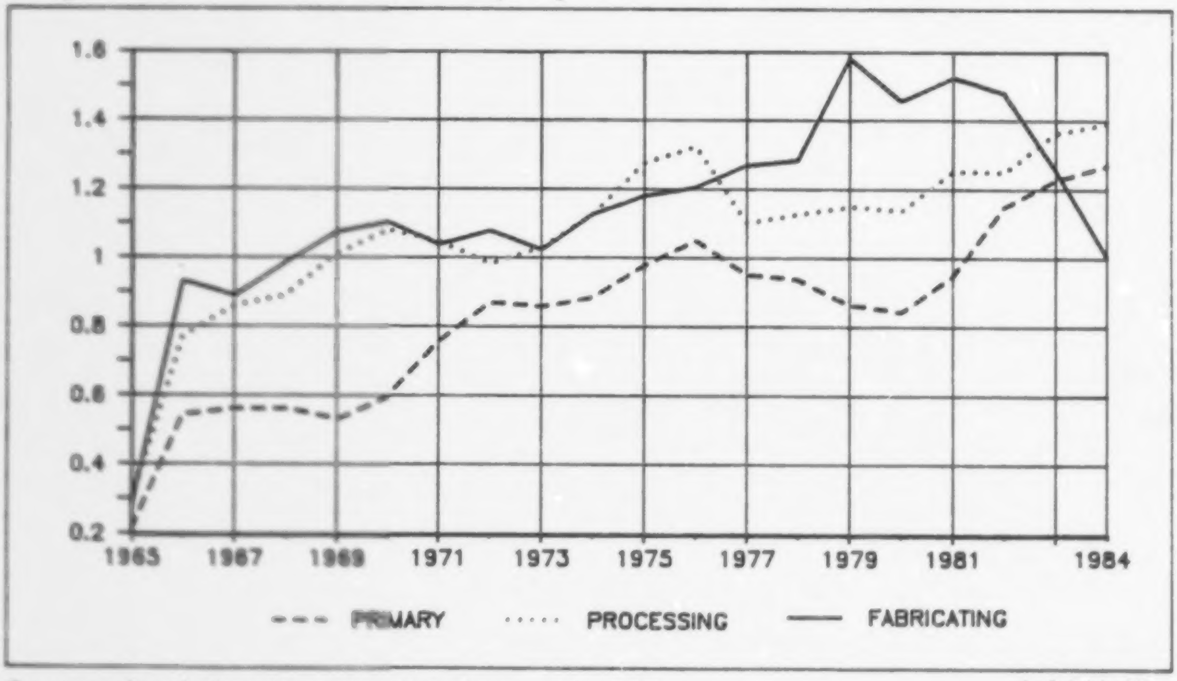
DEBT TO EQUITY: Total Activity, Mineral Sector

Figure 167. Debt to Equity Ratio, Total Activity



(ref: table X5)

Figure 168. Debt To Equity Ratio, Mineral Sector



Source: Statistics Canada, Catalogue 61–207.

(ref: table X6)

The term "debt" refers to net long–term debt as defined by Statistics Canada which includes long–term bank loans, mortgages, bonds and other debt.

Table X

TABLE 1: PRIMARY ACTIVITY

NET LONG-TERM DEBT TO EQUITY	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975
AGRICULTURE	0.40	0.38	0.70	0.63	0.57	0.60	0.61	0.57	0.52	0.52	0.61
FORESTRY	0.21	0.44	0.18	0.25	0.26	0.29	0.26	0.40	0.38	0.38	0.33
MINERALS	0.22	0.21	0.20	0.19	0.19	0.22	0.32	0.38	0.34	0.29	0.32
PETROLEUM	0.18	0.21	0.21	0.22	0.19	0.14	0.15	0.14	0.13	0.13	0.18
TOTAL RESOURCES PRIMARY	0.21	0.22	0.22	0.22	0.20	0.20	0.25	0.28	0.25	0.23	0.27

TABLE 2: MINING INDUSTRY

NET LONG-TERM DEBT TO EQUITY	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975
METAL MINES	0.23	0.22	0.20	0.18	0.18	0.20	0.33	0.42	0.37	0.32	0.36
NON-METAL MINES	0.13	0.11	0.16	0.19	0.21	0.25	0.20	0.17	0.13	0.10	0.14
COAL MINES	0.46	0.39	0.53	0.37	0.48	0.79	1.07	0.55	0.41	0.29	0.16
QUARRIES	0.33	0.55	0.17	0.33	0.24	0.32	0.31	0.29	0.28	0.43	0.46
TOTAL MINING	0.22	0.21	0.20	0.19	0.19	0.22	0.32	0.38	0.34	0.29	0.32

TABLE 3: PROCESSING

NET LONG-TERM DEBT TO EQUITY	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975
AGRICULTURE	0.14	0.13	0.16	0.17	0.16	0.17	0.18	0.20	0.19	0.20	0.22
FORESTRY	0.55	0.50	0.55	0.52	0.44	0.62	0.67	0.50	0.47	0.43	0.40
MINERALS	0.30	0.29	0.35	0.36	0.38	0.43	0.43	0.39	0.34	0.41	0.49
PETROLEUM	0.15	0.12	0.13	0.15	0.22	0.23	0.22	0.23	0.19	0.21	0.20
TOTAL RESOURCES PROCESSING	0.23	0.20	0.25	0.26	0.25	0.28	0.28	0.28	0.25	0.27	0.28

TABLE 4: FABRICATING

NET LONG-TERM DEBT TO EQUITY	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975
FORESTRY	0.31	0.37	0.41	0.43	0.42	0.45	0.45	0.44	0.44	0.37	0.36
MINERALS	0.28	0.31	0.28	0.31	0.34	0.35	0.33	0.34	0.29	0.30	0.33
TOTAL RESOURCES FABRICATING	0.30	0.36	0.38	0.40	0.40	0.43	0.42	0.41	0.39	0.35	0.35

TABLE 5: TOTAL ACTIVITY

NET LONG-TERM DEBT TO EQUITY	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975
AGRICULTURE	0.15	0.15	0.20	0.21	0.20	0.21	0.22	0.24	0.24	0.25	0.28
FORESTRY	0.34	0.39	0.42	0.43	0.42	0.47	0.47	0.45	0.44	0.38	0.37
MINERALS	0.26	0.25	0.26	0.27	0.26	0.29	0.35	0.38	0.33	0.32	0.36
PETROLEUM	0.17	0.17	0.19	0.20	0.20	0.18	0.18	0.18	0.16	0.17	0.19
TOTAL RESOURCES TOTAL ACTIVITY	0.24	0.24	0.26	0.27	0.26	0.27	0.29	0.30	0.27	0.27	0.29
TOTAL, ALL INDUSTRIES	0.41	0.43	0.45	0.46	0.47	0.60	0.63	0.64	0.74	0.73	0.79

TABLE 6: MINERAL SECTOR

NET LONG-TERM DEBT TO EQUITY	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975
PRIMARY	0.22	0.55	0.57	0.57	0.54	0.60	0.76	0.87	0.86	0.89	0.98
PROCESSING	0.30	0.78	0.87	0.90	1.02	1.09	1.05	0.99	1.04	1.13	1.28
FABRICATING	0.28	0.94	0.89	0.99	1.08	1.11	1.04	1.08	1.03	1.13	1.19
TOTAL MINERAL SECTOR	0.26	0.69	0.72	0.74	0.73	0.79	0.87	0.93	0.93	0.99	1.09

```
*************************************************************************************************************
                                                                              ====== AVERAG =======  ====== C.O.V. ========
 1976    1977    1978    1979    1980    1981    1982    1983    1984   65-84   65-74   75-84   65-84   65-74   75-84

 0.52    0.55    0.64    0.70    0.72    0.75    0.77    0.82    0.74    0.62    0.55    0.68   18.58%  17.14%  13.66%
 0.42    0.32    0.40    0.49    0.51    0.47    0.35    0.22    0.30    0.34    0.30    0.38   27.83%  28.35%  23.22%
 0.37    0.33    0.37    0.30    0.27    0.36    0.50    0.54    0.49    0.32    0.25    0.39   32.12%  26.78%  23.13%
 0.22    0.22    0.26    0.31    0.35    0.43    0.45    0.42    0.43    0.25    0.17    0.33   42.69%  20.00%  29.49%
-----   -----   -----   -----   -----   -----   -----   -----   -----
 0.31    0.29    0.33    0.33    0.34    0.42    0.48    0.47    0.47    0.30    0.23    0.37   30.74%  10.41%  20.86%
-------------------------------------------------------------------------------------------------------------
                                                                              ====== AVERAG =======  ====== C.O.V. ========
 1976    1977    1978    1979    1980    1981    1982    1983    1984   65-84   65-74   75-84   65-84   65-74   75-84

 0.44    0.34    0.34    0.28    0.28    0.36    0.52    0.57    0.50    0.33    0.26    0.40   33.94%  31.45%  24.11%
 0.14    0.34    0.33    0.31    0.24    0.27    0.29    0.29    0.30    0.21    0.16    0.26   35.13%  26.30%  25.60%
 0.15    0.20    0.71    0.51    0.20    0.39    0.57    0.64    0.62    0.47    0.53    0.41   46.88%  41.01%  50.45%
 0.38    0.41    0.59    0.43    0.44    0.50    0.48    0.51    0.51    0.40    0.33    0.47   27.18%  29.76%  12.41%
-----   -----   -----   -----   -----   -----   -----   -----   -----
 0.37    0.33    0.37    0.30    0.27    0.36    0.50    0.54    0.49    0.32    0.25    0.39   32.11%  26.78%  23.06%
-------------------------------------------------------------------------------------------------------------
                                                                              ====== AVERAG =======  ====== C.O.V. ========
 1976    1977    1978    1979    1980    1981    1982    1983    1984   65-84   65-74   75-84   65-84   65-74   75-84

 0.21    0.21    0.21    0.22    0.25    0.30    0.33    0.34    0.33    0.22    0.17    0.26   28.98%  14.28%  20.40%
 0.43    0.47    0.39    0.32    0.54    0.75    0.87    0.86    0.87    0.56    0.53    0.59   28.93%  13.67%  35.79%
 0.54    0.43    0.40    0.36    0.37    0.44    0.51    0.50    0.54    0.41    0.37    0.46   17.43%  13.09%  13.74%
 0.20    0.18    0.16    0.15    0.14    0.28    0.28    0.29    0.19    0.20    0.19    0.21   25.01%  22.07%  26.12%
-----   -----   -----   -----   -----   -----   -----   -----   -----
 0.29    0.27    0.24    0.22    0.25    0.35    0.38    0.38    0.33    0.28    0.26    0.30   17.08%   9.39%  18.03%
-------------------------------------------------------------------------------------------------------------
                                                                              ====== AVERAG =======  ====== C.O.V. ========
 1976    1977    1978    1979    1980    1981    1982    1983    1984   65-84   65-74   75-84   65-84   65-74   75-84

 0.40    0.44    0.41    0.34    0.33    0.55    0.63    0.60    0.54    0.43    0.41    0.46   19.50%  10.62%  22.89%
 0.35    0.41    0.43    0.50    0.43    0.46    0.55    0.47    0.35    0.37    0.31    0.43   20.77%   7.74%  16.01%
-----   -----   -----   -----   -----   -----   -----   -----   -----
 0.39    0.43    0.42    0.38    0.36    0.52    0.61    0.56    0.48    0.42    0.38    0.45   17.60%   9.43%  18.93%
-------------------------------------------------------------------------------------------------------------
                                                                              ====== AVERAG =======  ====== C.O.V. ========
 1976    1977    1978    1979    1980    1981    1982    1983    1984   65-84   65-74   75-84   65-84   65-74   75-84

 0.27    0.27    0.29    0.31    0.35    0.41    0.45    0.46    0.45    0.28    0.21    0.35   33.28%  15.48%  21.83%
 0.41    0.44    0.41    0.34    0.38    0.58    0.66    0.62    0.57    0.45    0.42    0.48   19.78%   9.40%  23.50%
 0.41    0.37    0.39    0.34    0.32    0.39    0.51    0.52    0.48    0.35    0.30    0.41   22.50%  14.42%  16.39%
 0.21    0.21    0.22    0.25    0.27    0.38    0.39    0.38    0.35    0.23    0.18    0.28   32.89%   7.22%  27.37%
-----   -----   -----   -----   -----   -----   -----   -----   -----
 0.31    0.31    0.31    0.30    0.31    0.41    0.46    0.46    0.42    0.31    0.27    0.36   21.31%   6.96%  16.73%

 0.85    0.87    0.86    0.83    0.81    0.83    0.85    0.83    0.76    0.69    0.56    0.83   23.21%  21.38%   3.82%
-------------------------------------------------------------------------------------------------------------
                                                                              ====== AVERAG =======  ====== C.O.V. ========
 1976    1977    1978    1979    1980    1981    1982    1983    1984   65-84   65-74   75-84   65-84   65-74   75-84

 1.06    0.95    0.94    0.87    0.85    0.95    1.15    1.23    1.28    0.83    0.64    1.03   30.84%  30.75%  13.76%
 1.33    1.11    1.13    1.15    1.14    1.26    1.25    1.37    1.40    1.08    0.91    1.24   22.31%  25.03%   7.98%
 1.21    1.28    1.29    1.59    1.46    1.53    1.48    1.26    1.01    1.14    0.96    1.33   24.24%  24.65%  12.84%
-----   -----   -----   -----   -----   -----   -----   -----   -----
 1.15    1.04    1.04    1.04    1.01    1.11    1.23    1.27    1.26    0.95    0.77    1.12   24.91%  25.52%   8.31%
-------------------------------------------------------------------------------------------------------------
```

5. CONCLUSION

This study has provided an extensive statistical review of Canada's resource industries over the past decade and a half. The aggregate nature of the analysis should again be stressed. Only the trends in broad (2 or 3 digit SIC) industry definitions have been examined. Specific commodities or sub-industries within these broad definitions can (and indeed have) run counter to the trends outlined in this paper. The example of the precious metals portion of mining comes immediately to mind.

Perhaps the most striking feature of the seventies was the volatility displayed by all four resource sectors. The oil price shocks of the early and late seventies, together with record inflation rates, certainly account for a great deal of this volatility. The high prices for resource products in the late seventies provided the impetus for new capital investment, both in Canada and abroad, which eventually resulted in the over-capacity and low commodity prices of the early eighties.

The severe recession of 1981-83 imposed a heavy toll on Canada's resource industries. High interest rates and sluggish demand left many companies in dire financial straits. Layoffs and closures were an all too common phenomenon of the early eighties. Yet this rationalization process did have positive results. Labour productivity and operational efficiency rose, while per unit operating costs fell. This placed producers in a position in which they could take advantage of even small increases in commodity prices.

How has the volatility of the seventies and eighties affected the relative performance of Canada's resource industries? The following table summarizes the results outlined in the paper. For each category (output, GDP, etc.) the relative position for each of the four resource industries is tabulated for 1971 (first column) and 1984 (second column). For example, in 1971 agriculture had the highest gross output, followed by minerals, forestry and petroleum. In 1983 (1984 figures not available), agriculture ranked first, but petroleum now had the second highest level of output, minerals fell to third place and forestry to fourth. All categories are measured in current dollar terms.

The final three columns summarize the net changes overall for each industry. For example, agriculture increased its rank in one category, fell in rank in four categories and maintained its rank in the remaining five categories. This ranking method does give a general indication of how the resource industries have fared relative to one another over the thirteen years. However, the reader is cautioned from attempting to assign an over-all absolute ranking to the four industries based on this table. This would involve implicitly giving an equal weighting to each of the categories - something the authors strongly argue against.

Table II

RELATIVE RANKINGS: TOTAL ACTIVITY

	Output*		GDP*		Exports		Freight		Invest		Employ		Wages	
	1971	1983	1971	1983	1971	1984	1971	1984	1971	1984	1971	1984	1971	1984
Agri	1	1	1	1	3	3	2	2	2	2	-	-	-	-
For	3	3	3	4	2	2	3	3	4	4	2	1	3	3
Min	2	4	2	3	1	1	1	1	1	3	1	2	2	2
Pet	4	2	4	2	4	4	4	4	3	1	3	3	1	1

	Profit		Taxes**		Assets***		Equity		D/E		Up	Down	Same
	1971	1984	1972	1984	1971	1984	1971	1984	1971	1984			
Agri	3	2	1	2	1	2	1	2	3	4	1	4	5
For	4	4	4	4	4	3	4	3	4	3	4	1	7
Min	1	3	3	3	2	4	2	4	2	2	0	7	5
Pet	2	1	2	1	3	1	3	1	1	1	7	0	5

Notes:

* gross output and GDP are ranked for 1983
- agriculture was not included in these sections
** income tax paid was ranked for 1972
*** rankings for return on assets and equity are for before tax earnings. After tax returns would reverse the positions for agriculture and petroleum for 1984. 1971 would remain unchanged. Total profit rankings are for pre-tax profits.

This caveat not withstanding, some patterns do emerge from the table. Petroleum, as one would expect, has increased in importance since 1971 - rising in seven of twelve categories and remaining the same in five. Note that 1971 was before the initial price shocks of 1973 and that in 1984 the price of oil had not yet fallen. Thus the petroleum sector's strength may be slightly overstated, although its gains over the last fifteen years are indisputable. The devastating effects of the recession on the mineral industry is evident in table II. The mineral industry fell in seven categories and did not rise in any. The forestry and agriculture industries had less striking shifts. Forestry improved in four categories, and fell in one; agriculture rose in one and fell in four.

How have the resource industries fared since 1984? As the world-wide recession gradually gave way to recovery, the forestry sector, and in particular the pulp and paper industry, was the first of the resource industries to begin to prosper. Although activity in precious metals had picked up earlier, it was not until the summer of 1987 that the base metals industry began its own comeback. Even the petroleum sector, which had been devastated by the collapse in prices to the $10/bbl (US$) level over the 1985-86 period, was struggling back as oil prices rose (at least temporarily) above the $22 mark for the first time since 1985. Agriculture is the only resource industry which has not shown any significant sign of improvement as of the time of publishing. Oversupply, brought on by government subsidies and the fall in demand as third world countries become self-sufficient (or net exporters) continue to depress the world's agricultural (especially grain) markets.

While these rather general trends of the past few years are self-evident, no "hard" statistics are (as yet) available to completely document them on a comprehensive basis. Alternative statistical sources (trade journals, newspapers, etc.) are available for some of the categories covered in this document. However, these statistics are often preliminary or estimates, or possibly proxies of some kind. Since the main purpose of this report is to provide a sound, reliable, consistent and extensive statistical survey of Canada's resource industries, the decision was made not to include any of these numbers here.

In summary, one can safely say that, despite the tremendous volatility in resource markets over the past decade and a half, Canada's resource industries still play a major role in the national economy. Yet any sense of complacency by those in the resource sector would be misplaced. A number of factors can be cited to counter any notion that remarkable growth of the fifties and sixties will be duplicated in the foreseeable future. Among the most important of these factors is the increased competition which Canadian producers will face in the coming years. Low-cost producers in the third world have demonstrated their ability to compete on world markets, at times to the detriment of established producers like Canada.

The increase in protectionist sentiments in the United States could have major repercussions for our resource industries. As was seen, Canada's resource sector is highly export-oriented, and highly concentrated in the U.S. market. This is particularly so for processed and fabricated products. Examples of what this means to Canada have already been seen in shakes and shingles, and in softwood lumber. One can add to these concerns the effects of substitution of man-made materials which is especially relevant to the mineral industry. All of these factors will challenge Canada's resource sectors in the coming years. It will no doubt take a combined effort by industry, labour and government to ensure Canada's resource sector continues to grow and prosper.

APPENDIX A

These notes are intended only as a general guide to the terms and concepts used in this study. For exact definitions and complete descriptions, the reader is referred to the respective Statistics Canada publications, from which much of the following was obtained.

GROSS OUTPUT

Source: Statistics Canada Catalogue 61-213 (current & constant price)

The current dollar series was taken directly from 61-213; the constant (1986) dollar series was derived by deflating the current dollar series by the GNE deflator. The output index figures were constructed using the constant (1971) price series from 61-213, taking 1972 = 100 as the base year (i.e. each industry is measured relative to its 1972 value).

GDP

Source: Statistics Canada Catalogue 61-213 (current prices).
Statistics Canada Catalogue 61-005 (constant 1971 prices).

The current dollar series was taken directly from 61-213; the constant (1986) dollar series was derived by deflating the current dollar series by the GDP deflator. The output index figures were constructed using the constant (1971) price series from 61-005, taking 1972 = 100 as the base year (i.e. each industry is measured relative to its 1972 value).

GDP is measured at factor cost, which is equivalent to GDP at market prices less net indirect taxes. GDP is measured either directly by summing factor incomes and depreciation or indirectly by subtracting intermediate goods and services from gross output.

EXPORTS

Source: Statistics Canada Catalogue 65-001.

The export statistics in this study refer to "Total Exports" which are the sum of domestic exports and re-exports. Domestic exports are exports which are grown, extracted or manufactured in Canada, while re-exports are exports of goods which have not been materially transformed in

Canada. Exports are valued on a Balance of Payments Basis which covers all economic transactions between residents and non-residents. Customs based data cover physical movements of goods as reflexted on Customs documents. Balance of Payments Basis adjusts for such factors as transportation charges. The constant 1986 dollar series was derived using the GNE deflator.

RAIL FREIGHT

Source: Statistics Canada Catalogue 52-001.

Rail freight is defined as revenue freight loaded on lines in Canada and is measured in metric tonnes. Statistics Canada does not "net-out" these statistics so double-counting may result in sectors where goods produced are transported by rail at more than one stage of the production process.

INVESTMENT

Source: Statistics Canada Catalogue 61-205, 61-206, 61-214.

The investment series in this study refers to capital expenditures only, excluding all repair expenditures. Capital expenditures include outlays for both construction and machinery and equipment, which have a life of more than one year. This series emphasises new capital formation and therefore excludes payments made for previously existing structures, used equipment and transfers of land. No deductions are made for scrap or trade-in value of old assets.

EMPLOYMENT & WAGES

Source: Statistics Canada, Annual Census of Forestry, 25-202.
Annual Census of Mines, 26-201.
Annual Census of Manufactures, 31-203.

The employment figures quoted in this study refer to "total employees" which includes production and related workers, as well as administrative and office personnel.

The term "wages" includes both salaries and wages, which are computed before deductions for income tax and employee portion of employment benefits. Included are payments for regular hours, overtime, paid leave and bonuses. Employer-provided benefits, both required (eg. employer portion of UIC, CPP, etc.) and optional (medical, pensions, etc.) are excluded. Wages in this paper are expressed as weekly wages which was computed as total wages and salaries divided by total employees, divided by 52 weeks. Real wages are expressed in 1986 dollars which were deflated using the Canadian CPI (1981 = 100).

FINANCIAL VARIABLES

Source: Statistics Canada Catalogue 61-207, 61-208.

Total Profit Volumes:

Total profit volumes are examined in before and after tax form. Profit before tax is calculated as total income less total expenses and non-recurring items. This is defined as "net profit before direct taxes" in Statistics Canada Catalogue 61-207. Included in total expenses are royalties and taxes other than direct taxes. Taxes other than direct taxes encompass municipal taxes, business taxes, water taxes and licenses. Royalties represent the cost of the rights to use the natural resource. Profit after tax is profit before tax less provisions for income tax (current and deferred, provincial and federal) and mining and logging taxes. This is defined as "net profit (loss) after taxes" by Statistics Canada. The difference between before- and after-tax profits will not, in general, match up exactly with the total tax series examined below. This is because the latter excludes logging and mining taxes and represents income taxes actually paid rather than provisions for income tax. Both pre- and post-tax profits are expressed in current and constant 1986 dollars. Once again the GNE deflator was used to convert to constant dollars.

Total Tax:

As mentioned above, total tax is the actual amount of federal and provincial income taxes paid as declared by corporations on their T2 returns. The tax amounts are net of all rebates, abatements, deductions and credits. Once again it is stressed that this series refers to income taxes only and does not take account of mining, logging or petroleum and gas revenue taxes. The inclusion of these taxes could significantly alter the relative positions of the four industries with respect to taxes paid.

Tax Rates:

The tax rate series was computed by dividing the income tax series by profits before tax. This will differ from tax rates based on taxable income because of the timing of inclusion of various revenues and expenses, income exempt from tax and special provisions.

Rate of Return on Assets:

The rate of return on assets is computed on both a before- and after-tax basis. They were derived by dividing profits before (after) tax by total assets. Also included is a series which shows the difference in returns between the pre- and post-tax returns.

Rate of Return on Equity:

The returns on equity, as was the case for returns to assets, are calculated on a before- and after-tax basis and includes a "difference" series. Equity includes common and preferred shares, retained earnings and contributed surplus.

Debt to Equity:

The debt to equity ratio was calculated by dividing net long-term debt by total equity as defined above. Net long-term debt includes long-term bank loans, mortgages, bonds and other debt less amounts due within one year.

The following table summarizes the key aspects of each series examined in this study.

APPENDIX A

Series	Value	Industry	Stages	Years	Catalogue	Table	Comments
Gross Output	Current	All	I,II,III	1971-83	61-213	3	
Gross Output	Constant (86$)	All	I,II,III	1971-83	61-213	3	Constant byGNE Deflator
Gross Output	Prod Index (71P)	All	I,II,III	1972-84	61-213	3	
GDP	Current	All	I,II,III	1971-83	61-213		
GDP	Constant (86$)	All	I,II,III	1971-83	61-213		Constant by GNE Deflator
GDP	Prod Index (71P)	All	I,II,III	1972-84	61-005	2	
Exports	Current	All	Crude & Fabricated Materials	1971-86	65-001	6	Constant by GNEDeflator
Exports	Constant (86$)	All	Crude & Fabricated Materials	1971-86	65-001	6	
Rail Freight	Metric Tonnes	All	Crude & Fabricated Materials	1970-86	52-001	1	
Investment	Current	All	I,II,III	1971-87	61-205	1,2,3	Constant by GNEDeflator
Investment	Constant (86$)	All	I,II,III	1971-87	61-206	1,2,3	
Employment	Total Workers	For,Min,Pet	I,II,III	1963-86	31-203	3	
					26-201	5	
					25-202	11	
Weekly Wages	Current	For,Min,Pet	I,II,III	1963-84	31-203	3	
Weekly Wages	Constant (86$)	For,Min,Pet	I,II,III	1963-84	26,201	5	Constant by CPI
					25-202	11	
Total Profit	Cur Before Tax	All	I,II,III	1965-84	61-207		
Total Profit	Con Before Tax	All	I,II,III	1965-84	61-207	2A,2B	Constantby GNE Deflator
Total Profit	Cur Before Tax	All	I,II,III	1965-84	61-207		
Total Profit	Con Before Tax	All	I,II,III	1965-84	61-207		Constant by GNEDeflator
Total Tax	Current	All	I,II,III	1965-84	61-208	10	Constant by GNEDeflator
Total Tax	Constant (86$)	All	I,II,III	1965-84	61-208		
Tax Rates	Percent	All	I,II,III	1965-84	61-207		Total Taxes/Net ProfitsBefore Tax
					61-208		
R.O.R. Assets	Before Tax	All	I,II,III	1965-84	61-207		Profits BeforeTax/Total Assets
R.O.R. Assets	After Tax	All	I,II,III	1965-84	61-207	2A	Profits AfterTax/Total Assets
R.O.R. Assets	Difference	All	I,II,III	1965-84	61-207		
R.O.R. Equity	Before Tax	All	I,II,III	1965-84	61-207		Profits BeforeTax/Total Equity
R.O.R. Equity	After Tax	All	I,II,III	1965-84	61-207	2A	Profits AfterTax/Total Equity
R.O.R. Assets	Difference	All	I,II,III	1965-84	61-207		
Debt to Equity	Percent	All	I,II,III	1965-84	61-207	2A	

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